

Farm Chemicals

Pioneer Journal
of the Industry

Iowa Fert.
Company 37

Crane
Handling 40

Solutions
Meeting 45

Grassy
Weedkiller . . . 47

1955 Index
50-52



*These progress pictures
made in August show
portions of Escambia Bay
Chemical Corporation's
nitrogen plant now nearing
completion at
Pensacola, Florida*

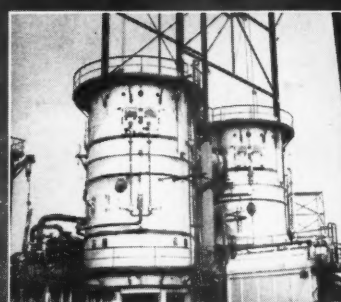
ON SCHEDULE



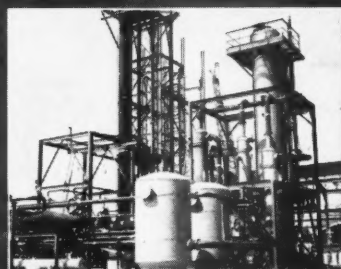
ESCAMBIA BAY CHEMICAL PLANT

Nitrogen materials for agriculture and industry will be available from the Escambia Plant which will provide complete nitrogen production for the Southeast. Products will include anhydrous ammonia, ammonium nitrate, nitrogen solutions and nitric acid.

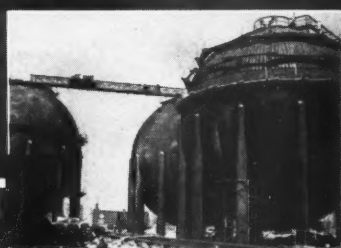
Escambia Bay Chemical Corporation is owned by United Gas Corporation, Electric Bond and Share Company and National Research Corporation.



Primary gas reformer units which are the heart of the process where natural gas is cracked to hydrogen.



Gas purification section where the main gas stream is freed of carbon dioxide and carbon monoxide in order to insure feeding a pure nitrogen-hydrogen gas stream to the converter.



Three storage spheres, with a total capacity of over 6,000 tons of anhydrous ammonia.

Please address communications to
ASHCRAFT-WILKINSON CO.

Exclusive Distributors
Atlanta, Georgia

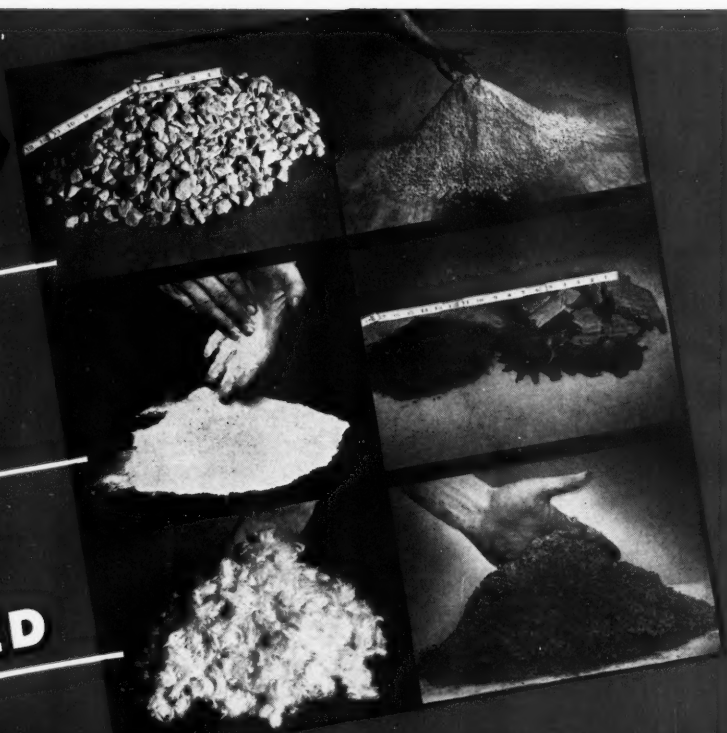
DISTRICT OFFICES
Norfolk, Va. • Charleston, S. C. • Tampa, Fla. • Jackson, Miss. • Columbus, Ohio

If You Want it

CRUSHED

GROUND

SHREDDED



There's a **WILLIAMS** Mill

Whatever the material—mineral, vegetable, animal or chemical—you'll find a Williams Mill to crush, grind, shred or pulp it to exactly meet your most critical specifications. Of equal importance, and regardless of the size of the job, there's a size and type that will probably do it in one operation entirely without the need for additional or secondary equipment!

You get more for your investment too, when you choose a Williams! You'll find it more carefully designed, more ruggedly built, for year-after-year service. You'll find it offers the most in low-cost operation, in minimum maintenance, and in features that mean continuously stepped-up production. It will pay you to get *ALL* the facts!

WILLIAMS PATENT CRUSHER & PULVERIZER CO.
2718 N. Ninth Street ☆ ST. LOUIS 6, MO.

**WILLIAMS EQUIPMENT
INCLUDES:**

HEAVY DUTY HAMMER MILLS, all sizes... ROLLER and IMPACT MILLS with Air Separation for grinding to 325 mesh or finer... HELIX-SEAL MILLS for fine dustless grinding and non-clog wet grinding... DRYER MILLS... AIR SEPARATORS... VIBRATING SCREENS... COMPLETE "Packaged" PLANTS, ready to install in existing buildings.



WILLIAMS TESTING LABORATORY WILL HELP YOU
Submit your grinding, crushing or shredding problems to Williams for solution—with neither obligation or cost. Simply send enough raw material for a test, and describe the result you want.

WILLIAMS

CRUSHERS

GRINDERS

SHREDDERS



OLDEST AND LARGEST MANUFACTURER OF HAMMER MILLS IN THE WORLD

DECEMBER, 1955

Farm Chemicals

DECEMBER, 1955

No. 12

Vol. 118

Pioneer Journal of Farm Chemicals Industry, Est. 1894

INDUSTRY NEWS

Business and Management . . .	4	Government	22
Construction	16	Associations & Meetings . . .	24
People	16	Calendar	26

FEATURES

AAPCO Hears Barnard Call for Safety Drive	35
Open House at Continental Fertilizer Co.	36
AAFCO Elects Etheredge	38
Check Your Bucket Crane	40
Thioneb—A Potent New Fungicide & Seed Protectant	44
At the Des Moines N Solutions Meet	45
CDAA Controls Weed Grasses in Grass Family Crops	47
1955 Article Index	50
Calspray Opens Research Unit	64
Safety Meeting	66

DEPARTMENTS

Viewing Washington		Suppliers News	56
On Agriculture	29	Fertilizer Materials Market . . .	57
On Business	30	Patent Reviews	60
John Harms		Literature	61
Reader Service	33	Statistics	61
Equipment & Supplies	54	Buyers' Guide	67

STAFF

Publisher	SAM LEWIS VEITCH	Business Manager	A. A. WARE
Editor	GEO. P. TEEL, JR.	Advertising Manager	WARD CRANE
Editorial Assistant	PHYLLIS GERHART		

ADVERTISING REPRESENTATIVES

Chicago 1. Al Zilenziger, 333 N. Michigan Avenue	FRanklin 2-7100
Los Angeles 36. Hughlett Hollyday, Jr., 5478 Wilshire Blvd.	WEbster 18-201
New York. William H. Tindall, 437 Fifth Avenue	LExington 2-4128
Philadelphia 7. William H. Tindall, 317 N. Broad St.	MArket 7-3405
San Francisco 4. William Blair Smith, Russ Building	EXbrook 2-3723



Member

Business Publications Audit

A magazine national in scope and circulation and devoted to manufacturers, mixers and formulators of plant foods and pesticides. It has a free controlled circulation within specified segments of the industry.

Subscription rates to all others are: U.S., its possessions, Canada, Cuba and Panama—\$6.00; Mexico and foreign: \$7.50. Single copy—\$.50. Back Numbers \$1.00.

Published monthly by Ware Bros. Company, 317 N. Broad St., Philadelphia 7, Pa.
Telephone MArket 7-3405

Acceptance under Section 34.64 P. L. & R., authorized

In this issue . . .

Two new pesticides, one for plant disease control and the other a weed-killer were discussed at the recent Canadian Agr. Chem. Assn. meeting and will be of special interest to you.

CDAA, the Monsanto herbicide, is reviewed by R. R. Wangerin beginning on page 48. One of its most fascinating attributes is its effectiveness in control of grassy weeds in fields of crop plants of the same plant family. Monsanto is taking a long look at the possibilities for control of wild oats on Canada's tremendous acreage of grains.

The other material, Thioneb, described briefly on page 44 by C. W. Gates, exhibits potent action against a wide spectrum of plant fungi and appears effective for both plant application and as a seed protectant.

Some principles involved in the proper operation of overhead traveling bucket cranes are pointed out in the illustrated article beginning page 40. Shown are the right and wrong way to spot a bucket in a variety of situations and from two basic positions.

The October fall convention and trade show of the National Nitrogen Solutions Assn., was a distinct success and is covered briefly on pages 45-46.

The line-up of features is rounded out with reports on the meetings of the pesticide and fertilizer control groups on pages 35 and 38-39 respectively.

Cover story

J. W. Lofquist, J. C. Carlile Corp., and a visitor to the recent open house at Continental Fertilizer's Nevada, Iowa, plant inspect automatic controls for the ammonium phosphate unit. The neutral solution fertilizer facilities feature a unique ammonia converter and ammonium phosphate reactor. See page 36 for a short feature.

FARM CHEMICALS

International's New Triple Superphosphate assures more **complete ammoniation**

ONE look shows you why International's new Triple Superphosphate offers such a big advantage in ammoniation. Its improved fineness of texture; uniform, dust-free particles; and correct chemical structure assure maximum ammoniation in minimum time — help cut your manufacturing costs. International's new Triple Super is made by an improved process from high quality rock. Result: a high analysis product

(46% A.P.A. or better). Special conditioning before shipment helps prevent setting up en route. This, plus improved particle size, means less grinding before mixing, more economical handling, better texture in your finished products and high product performance. International's new Triple Super is ready for immediate delivery to your plant. Write or wire the Phosphate Chemicals Division for samples and quotations.



INTERNATIONAL MINERALS & CHEMICAL CORPORATION

General Offices: 20 North Wacker Drive, Chicago 6

Business & Management

.. News of the Industry

Gerdes, Geigy Des Moines Unit to DBL

On the first of the month, Diamond Black Leaf Co. took over operation of the Des Moines, Iowa, pesticide plant of Geigy Agricultural Chemicals Div. Emil C. Gerdes, former Midwestern manager for Geigy, is joining Diamond Black Leaf in a similar capacity.

The plant, according to Loren P. Scoville, Diamond president, places his company in a strategic position to produce and market

ton, S. C.; Savannah, Ga.; Norfolk, Va.; and Wilmington, N. C. ports. Deliveries in the US will continue from the same distributing areas.

It is now available through N. Y. Hanseatic and its exclusive sales representative, Alexander M. McIver & Son.

New NH₃ Station For Simplot Unit

An anhydrous ammonia unloading station is being established at Aberdeen, Idaho, by Simplot Soilbuilders of Idaho Falls. A part of the Blackfoot Sub-Soiler unit operated by Don Collaer, it will be run by Charles M. Behrend.

It will cooperate with Simplot Produce Co. in handling dry fertilizers and when facilities are adequate will handle the entire farm chemicals operation in the Aberdeen area.

Present construction includes ammonia car unloading facilities, railroad spur and a shop-warehouse-office building.

At the Klamath Falls, Ore., Soilbuilders unit, a new building has been erected to provide storage of 400 tons of bulk material and a quantity of bagged goods.

V-C Anniversary Booklet Released

Virginia-Carolina Chemical Corp. has prepared an attractive booklet, "In Partnership with the Soil," commemorating its 60th year of operation.

Well illustrated with a variety of pictures covering past and present operations and personnel, it is a compilation of articles that appeared in the V-C NEWS during recent months.

Chas. H. Lilly Firm To Portland Seed

Controlling interest in the Chas. H. Lilly Co., Seattle, Wash., has been obtained by Portland Seed Co., Portland, Ore. The two pioneers in Pacific Northwest farm and garden supply will continue to operate separately and will maintain their own identity and staffs.

New president of the Lilly concern is F. C. Trullinger, also president of Portland Seed Co., succeeding C. F. Larsen; J. D. Lilly, vice president, also vice president of the Portland company; and E. E. White, secretary-treasurer, former Lilly vice president and treasurer.

Merger of Stauffer—CCI Now Official

Merger of Stauffer Chemical Co. and Consolidated Chemical Industries, Inc., has been approved by stockholders of both concerns.

Surviving corporation of the merger, which was effective on November 14, was Stauffer with total assets of \$125 million.

Fire Razes Laurel Oil & Fert. Plant

In a spectacular blaze, the fertilizer plant and seed mill of Laurel Oil & Fertilizer Co. at Laurel, Miss., were destroyed.

Damage was estimated by D. P. Granberry, president (and head of the Mississippi Manufacturers Assn.) at \$175,000. Only half of the loss was covered by insurance.

Explosion Wrecks Velsicol Exp. Unit

An explosion at Velsicol Chemical Corp.'s Memphis, Tenn., plant on November 2 completely destroyed an experimental insecticide unit.

According to E. T. Collinsworth, Jr., exec. vice pres., commercial insecticide production would not be affected.

FARM CHEMICALS



2,4-D and other pesticide materials in the Midwest, for present distribution covers 15 states.

Dr. George R. Ferguson, president of the Geigy division, stated that the move was made primarily in the interests of intensifying Geigy's activities in the marketing of DDT and methoxychlor and in development and production of new farm chemicals.

It is expected that current operations at Des Moines will be continued with present personnel.

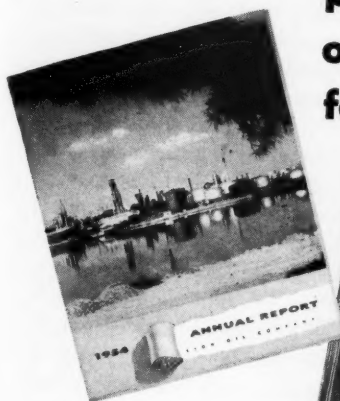
NY Hanseatic Sells W. German Nitrate

Farbwerke Hoechst, Frankfurt-Hoechst, has appointed New York Hanseatic Corp. exclusive distributor for the Zebra brand calcium ammonium nitrate.

Produced in West Germany, the material has been imported for many years through Charles-

Two CHEMICO - designed plants

produce over 900 tons per day
of anhydrous ammonia
for Lion Oil Company



Production volume at the El Dorado Chemical Plant reached an all time high in 1954. Total of all nitrogen products manufactured for sale increased 10 per cent over the previous year.

Anhydrous ammonia, which is the basic product of the plant and the raw material for the manufacture of other nitrogenous materials, was produced at an average rate of 582 tons per day throughout the year. The comparative figure for 1953 was 576 tons daily with the same equipment.

Extracts from the 1954 Annual Report of Lion Oil Company, referring to Plants designed by Chemico to produce 900 tons per day of anhydrous ammonia and corresponding amounts of nitric acid and ammonium nitrate.

The Barton Plant near New Orleans, Louisiana, was completed in June, 1954, after a construction period of about 18 months. The manufacturing facilities were gradually brought up to full production and operated at rates above the designed daily capacities of 300 tons of anhydrous ammonia, 430 tons of nitric acid and 550 tons of pelleted ammonium nitrate. This plant was formally dedicated on October 25, 1954, in ceremonies attended by employees, their families and many guests.

CHEMICAL CONSTRUCTION CORPORATION

A UNIT OF AMERICAN CYANAMID COMPANY

Designers and constructors of complete plants and facilities for the chemical, metallurgical and petrochemical processing industries for over 40 years

525 WEST 43RD STREET, NEW YORK 36, NEW YORK
Cable Address: Chemiconst, New York • Technical Representatives: Cyanamid Products Ltd, London
South African Cyanamid (Pty) Ltd., Johannesburg



CHEMICO

... Business & Management

IMC Earnings Top \$6 Million in 54-55

Earnings of International Minerals & Chem. Corp. for the year ended June 30 totaled \$6,321,903 compared with \$6,043,979 for the previous year. This was equivalent to \$2.55 and \$2.44 respectively per common share.

Louis Ware, president, told stockholders at a recent annual meeting that the Florida phosphate strike caused losses during June and particularly during the first three months of this fiscal year. However, he said, "I believe the chances are favorable for our being able to recoup some of our losses which together with improved and expanded operations in the new plants should result in earnings about as good as the previous year."

Stockholders reelected all directors and approved a stock option plan for employees, providing for purchase of common shares at a price not less than 90 per cent of market value on October 27, 1955.

Synthetic N. Prod.— E. Leitz Consolidate

Papers have been filed at Albany, N. Y., for the consolidation of Synthetic Nitrogen Products Corp. and E. Leitz, Inc., 486 Fourth Ave., New York City 16.

Capital stock is listed as 2,300 shares no-par value.

Previously, a charter of incorporation was granted Synthetic Nitrogen Products at 285 Madison Ave., New York City 17, listing Henry Mann, Wm. H. Mann and James G. Scarff as directors. In both moves papers were filed by Alexander & Green.

First 1954 Reports By Census Bureau

Final tabulation of the 1954 Census of Business and Manufactures is under way, according to the Bureau of the Census. Preliminary reports were expected in print by the end of October, advance reports beginning in November.

Final reports with detailed data will begin coming off the press early next year with mid-1956 set as target date for completion of the whole job.

Diamond B L Holds Biggest Ad Drive

In its largest advertising campaign to date, Diamond Black Leaf Co. placed space in 63 newspapers during the fall, pushing sales of its ready-mixed warfarin rat bait.

An "airborne blitz" against the pests was launched from Louisville, Ky., when DBL shipped 50 cases of the bait via air freight to Portland, Ore., where a two-week community wide war against rodents was waged.

Believed to represent the first shipment of its kind, the shipment contained 1,200 pounds of the well known rat-killer.

Alex Parsons, American Airlines operations mgr.; Fred Bray, Diamond Black Leaf Louisville traffic mgr. and H. M. Davis, DBL Louisville sales supervisor, were present to observe loading of the unusual cargo.

Mexico Establishes Ag Aviation Course

For the first time in Latin America, a course in Agricultural Aviation has been established. Sponsored by Mexico's Department of Agriculture, it is being held at the International Civil Aviation Training Center in Mexico City, established last year to provide modern training for pilots and maintenance mechanics.

On the staff are US and European experts and eight nationals providing comprehensive instruction in low-level flying; use of fertilizers, insecticides and other farm chemicals; and spraying to control plagues.

Upon completion of the course, trainees will return to their homelands to initiate programs studied at the school and to act as instructors for other pilots. At present the student body totals 64 but with current widespread interest and plans for expanded facilities, it is expected that several hundred students per semester will eventually be registered.

Sohio Account to Klau-VP-D Agency

Sohio Chemical Co. has appointed Klau-Van Pietersom-Dunlap, Inc., Milwaukee advertising agency, to handle its advertising and merchandising.

S-W Export Unit Moves NYC Office

The New York office of Sherwin-Williams Co., Export Pigment Color and Chemical Div., is now located at 260 Madison Ave., zone 16. Telephone: LEXington 2-5806.

Export of S-W and Acme insecticides will be handled from this location.

FARM CHEMICALS



Cal-Nitro, Tegtmeyer To Bradley & Baker

Bradley & Baker have acquired the Cal-Nitro trademark used for over 20 years by Synthetic Nitrogen Products Corp. It will be used in connection with the sale of B&B's nitrogen fertilizer.

Miguel Tegtmeyer, former president of Synthetic N Products, has been retained as a consultant and Tom Davies, SNP southwestern sales representative for many years, has joined the sales staff of Bradley & Baker.

Over 600 Present For CFA Convention

OVER 600 persons were attracted to the 32nd annual convention of the California Fertilizer Assn. held at the Mark Hopkins Hotel, San Francisco, on November 6-8.

Featured on the program was a panel discussion of the importance of soil fertility and plant nutrition in marketing fertilizer materials. Moderated by Dr. D. G. Aldrich, Jr., the group included Dr. J. E. Knott, F. H. Leavitt, Dr. G. F. MacLeod, H. H. Hawkins and Gordon Bixler.

The knowledge of fertilizer salesmen regarding soil and crop needs is of top importance, it was stated, because of their influence on farm purchases. Tied to this is industry's responsibility in providing materials best suited for each crop and locality. Panelists said that public information on plant foods is developing on a sound basis.

J. Earl Coke, former USDA assistant secretary, now vice president of the Bank of America, said that surpluses should be managed to limit the supply to that of the highest quality. We should produce for use, not storage, he added, pointing out that most farm commodities now in surplus are not of high quality, and that crop support programs place as much value on poor as it does on high quality.

Coke commented that the present USDA program, if undisturbed, would restore our competitive position in world markets.

Another guest speaker was Dr. Russell Coleman, NPFI executive vice-president, who said that an important factor in sound soil management is the awareness of bankers and other financial agencies of the economic importance of fertilizer usage.

Members elected four directors:

V. A. Frizzell, one year term; H. H. Hawkins (re-elected), W. G. Hewitt and M. M. Stockman, three year terms. Officers selected by the board include: W. E. Snyder, Wilbur-Ellis Co., president; Jack Baker, Bandini Fert. Co., vice-president; H. H. Hawkins, Golden State Plant Food Co., secretary; W. G. Hewitt, Pacific Guano Co., treasurer. Sidney H. Bierly was re-elected executive secretary and manager.

Announcing



New York Hanseatic Corporation

has been appointed sole distributor for:

**ZEBRA DI-N-CAL
AMMONIUM NITRATE LIMESTONE
20.5% NITROGEN**

Manufactured in the Western Zone of Germany—this AMMONIUM NITRATE LIMESTONE has been imported and found wide acceptance during the last several years.

ZEBRA DI-N-CAL is manufactured in pellet form and is packed in 100 lb. paper lined jute bags.

NEW YORK HANSEATIC CORPORATION
120 BROADWAY NEW YORK 5, N. Y.

Affiliated Companies:

CARNEGIE CHEMICAL MFG. CORP.
LOS ANGELES, CALIFORNIA

JACK D. SCHWARTZ CO.
SAN FRANCISCO, CALIF.

Sales Representative: (East of the Rocky Mountains)

ALEXANDER M. McIVER & SON
P.O. BOX 155
CHARLESTON, S. C.

© 1955 NEW YORK HANSEATIC CORP.

A NEW AND RELIABLE SOURCE OF NITROGEN FERTILIZER... for Fertilizer Manufacturers

The \$16,000,000 plant of the Mississippi River Chemical

Company at Selma, Mo. — now in production — guarantees the

fertilizer manufacturer top quality in AMMONIUM

NITRATE 33.5% N, AMMONIUM NITRATE SOLUTIONS

and ANHYDROUS AMMONIA. There is the further

assurance of dependable service developed from Bradley &

Baker's many years of experience in meeting the plant

food requirements of manufacturers throughout the country.



**STEAMBOAT BRAND
AMMONIUM NITRATE
33.5% N**

**STEAMBOAT BRAND
AMMONIUM NITRATE
SOLUTIONS**

**STEAMBOAT BRAND
ANHYDROUS
AMMONIA**

Distributed by:

BRADLEY & BAKER

155 EAST 44 STREET • NEW YORK 17, N. Y.

District Sales Offices: ATLANTA, GA. • INDIANAPOLIS, IND. • ST. LOUIS, MO. • NORFOLK, VA. • HOUSTON, TEX.

MISSISSIPPI RIVER CHEMICAL COMPANY
A Division of Mississippi River Fuel Corp., St. Louis, Mo.

. . . Business & Management

N. Division Begins New PR-Ad Program

Nitrogen Division, Allied Chemical & Dye Corp., is embarking on a new public relations—advertising program built on the theme, "Fertilizer Grows Farm Profits." It is designed to tell farmers how to make money through fertilizer applications despite the current farm cost-price squeeze and is based on government and industry studies.

Consisting of a series of full page two-color ads appearing throughout 1956 in leading farm publications, the program will reach over 3½ million farmers each month. Supporting this phase will be direct mailings to the fertilizer industry, county agents, farm bankers and related groups.

Fertilizer brands will not be mentioned but the ads will promote use of all types of mixed fertilizers.

Simplot Centennial Mine to be Opened

On July 1, 1956, the J. R. Simplot Co. will begin open-pit mining of phosphate rock at its Centennial mine, a site expected to develop into one of the larger Western underground mining operations.

Following exploration begun in 1950, Simplot units found substantial quantities of open-pit and underground acid-grade phosphate rock on 3,600 acres of land in Clark county, Idaho, and Beaverhead county, Montana, and obtained a Federal lease for development.

It is anticipated that 100 to 150 thousand tons of ore will be mined next year. Ore will be trucked to a Union Pacific loading station at Monida, Mont.,

from which the entire 1956 output will be shipped to a Canadian firm.

Open pit deposits will be the first worked, with development of the larger underground operation to follow.

Conference on Agr. Uses of Antibiotics

At the First International Conference on the Use of Antibiotics in Agriculture, held during October in Washington, Dr. W. J. Zaumeyer, USDA plant pathologist, predicted that use of antibiotics in control of plant diseases would, in the near future, be as general as it is today in combatting human ailments.

Zaumeyer points out that the materials are absorbed by the plant and carried by the vascular system, unlike present standard sprays. It has also been found, he said, that a yield increase has been obtained in tomatoes, peppers and potatoes treated with a streptomycin-terramycin spray.

Another researcher, Dr. F. E. Deatherage of Ohio State University looks for commercial use of antibiotics on meat, milk and eggs to prevent spoilage due to bacterial action. He noted that antibiotics combined with refrigeration can facilitate preservation of perishables better than either alone.

The conference was sponsored by the National Academy of Sciences. During the meetings, some 50 experts toured the Squibb Institute for Medical Research at New Brunswick, N. J., where they viewed exhibits of plant disease control with antibiotics.

International agricultural scientists inspect plants treated with Phytomycin while visiting the Squibb Institute for Medical Research.

Report on Rutgers Headlee Fellowship

The Thomas J. Headlee Fellowship in Entomology at Rutgers University now has a principal fund that exceeds \$44,000, according to a report presented to the Fellowship's advisory council by Dr. Harry L. Haynes, Carbide & Carbon Chemical Co.

At the 11th annual meeting of the group, Thomas M. Stevens, a Headlee fellow for two years, reported new discoveries concerning occurrence of hyaluronidase, a spreading agent, in insects.

First known only in wasps, bees and mosquitoes in the insect world, Stevens found it in non-venomous species along with evidence that hyaluronidase may have a much bigger role in the life processes of insects than previously realized. Stevens pointed out that studies of the action could lead to insect control methods based on inhibiting the action of this enzyme.

Fred C. Swift, appointed to a fellowship this fall, outlined his proposed work, including investigation of why female insects are more resistant than males to insecticides and the mechanism by which an insect is able to detoxify a poison.

The meeting was presided over by Esso's Dr. Franklin C. Nelson, council chairman.



. . . Business & Management

AP&C to Acquire West. Electrochem.

Already owner of 48.2 per cent of Western Electrochemical Co. common stock, American Potash & Chemical Corp. has offered to acquire the balance of outstanding stock through exchange of 33,295 shares of AP&C Class B stock.

Western Electrochemical management is supporting the offer and acceptance is already assured by sufficient stockholders to bring AP&C holdings to over 88 per cent.

Western Electrochemical, with operations at Henderson, Nev., manufactures sodium chlorate among other products.

Coop. Tax Payment Demanded in Ark.

A movement has been launched in Arkansas for an amendment to the state constitution that would eliminate all "discriminatory" state tax exemptions, including those of cooperatives. In announcing completion of a tentative draft of the proposal, John F. Wells, Little Rock printing company executive and publisher of the ARKANSAS RECORDER, said the amendment would "make everybody engaged in the same business pay the same taxes."

Wells pointed out that cooperatives, including those formed to manufacture and sell fertilizer, pay property taxes but are exempt from state income taxes.

Deadline for filing petitions to get a constitutional proposal on the November, 1956, general election ballot in Arkansas is July 6 of next year. Signatures of about 35,000 qualified voters would be required.

Mexico Tries Saw Mill Waste Utilization

Small scale experiments have been initiated in Mexico by that country's Department of Agriculture in the utilization of saw mill wastes as organic fertilizer.

According to a government official, a series of large-scale operations will be financed with Federal funds, if current experiments are successful.

Lawn Fertilizer Co. Chartered in S. C.

A charter has been obtained by the Florence Lawn Fertilizer Co., Florence, S. C., to buy, process and sell fertilizer and fertilizer material. With Robert O'Harra as president, authorized capital stock is \$1,500.

PCO Reports on Canadian Potash

Potash Co. of America has completed drilling a ring of holes on its exploratory potash area lying 16 miles east of Saskatoon, Sask., Canada, according to G. F. Coope, president. Coope explains that the holes were driven to permit circulation of a freezing medium "in order that we might form a wall of ice in the weak and water-laden sedimentary beds which overlie the potash mineralization for some 3000 feet."

Circulation of the freezing medium began once the holes were completed and part of the ground has started to freeze. We hope, he said, to start sinking a 16-foot diameter shaft during November. The shaft will be lined with reinforced concrete with a maximum wall thickness of four feet.

Reviewing work completed to date, he adds, "We have a head-frame partly erected, two large hoists installed, a machine shop, a very large refrigeration plant and various other items of equipment on the job.

"It is an engineering project which we believe has no precedent," states Coope, "and obviously a very costly one. To date we have spent about \$4,000,000, including our prospecting expense."

There is no assurance that it is possible to economically mine potash at such a depth, he points out, but should a commercial operation be developed, it would be supplemental to the Carlsbad, N. M., operations. If PCA should be successful, Coope comments, "The Canadian operation should give us flexibility in serving our customers, and should also assure the company of very large reserves."

New Petrochemical Company

Now in Agricultural Chemicals

We are seeking an ambitious, energetic individual who wants to grow with us. He should:

Have a strong background on ammoniation and bulk plant mixing technology.

Be a Chemical Engineer or equivalent; well acquainted in Southeastern States.

Be able to supply technical advice and accompany sales personnel on customer contacts.

Be qualified as a company representative meeting State and University Agricultural organizations.

Please furnish complete resume of personal data, education and experience to Box 515, c/o FARM CHEMICALS, 317 North Broad St., Philadelphia 7, Pa.

DOUBLE VALUE DOUBLE POWER

FOR YOU...

FOR DEALERS...

FOR FARMERS

Sul-Po-Mag®

Water-Soluble Double Sulfate
of Potash-Magnesia
 $K_2SO_4 \cdot 2MgSO_4$
22% K_2O - 18% MgO

SULFATE OF POTASH
for the profitable production of
crops sensitive to chlorides

SULFATE OF MAGNESIUM
for high yields and quality on
magnesium-deficient soils

The need for sulfate of magnesium and sulfate of potash for the profitable production of a wide variety of crops in many farming areas is shown by research carried on by many agricultural colleges.

Consistent advertising in farm papers, and on radio and billboards is telling farmers that the most effective way to supply soluble magnesium and potash is to use a quality mixed fertilizer containing *Sul-Po-Mag*. We're building consumer acceptance for your premium grades — so cash in on the growing demand by using *Sul-Po-Mag* in the fertilizers you make for soils low in magnesium and potash. Identify your brand as a premium grade product by showing soluble magnesium in the analysis on the bag... *N-P-K*.
Mg

PUT IT IN THE BAG

PUT IT ON THE BAG

POTASH DIVISION INTERNATIONAL MINERALS & CHEMICAL CORPORATION • GENERAL

**DOUBLE
POWER**

**DOUBLE
VALUE**

. . . Business & Management

Yugoslavia & Chile Plan Nitrate Deal

Talks between Yugoslav exporters and representatives of Chilean firms regarding shipments of \$2.5 million worth of Chilean nitrate of soda have been concluded.

Kondekor, the Chilean Foreign Trade Administration, accepted a part of the commodity list offered by Yugoslavia totaling \$1.5 million for which 25,000 tons of the fertilizer material will be shipped.

New Atlas Powder Research Groups

Chemical research and development organization and staff has been realigned by Atlas Powder Co. to strengthen long-range research and product diversification programs.

The new set-up includes three groups—a chemical research department for long-range projects, a chemical engineering depart-

ment responsible for all commercial production studies and a product development department which will undertake market application and customer service work.

Dr. Walter H. C. Ruggeberg, formerly with Tennessee Corp., will direct the research phase, Marshall T. Sanders will continue to head engineering work and F. Faxon Ogden will be director of product development.

CCRC to Expand Aerosol Facilities

Expansion plans have been announced by Connecticut Chemical Research Corp., Bridgeport, Conn., aerosol producer. New West Coast facilities are planned, along with three new foreign plants during the next year.

Expansion of its Canadian affiliate was also reported by A. O. Samuels, president, who stated that additions to the Bridgeport plant has brought daily capacity to over 250,000 units.

Stauffer 9 Month Net Sales Up 24%

Stauffer Chemical Co. reports net sales for the first nine months of the year totaled \$79,704,000, up 24 per cent over the 1954 period. Net earnings of \$6,475,000 represented an increase of 44 per cent.

Hans Stauffer, president, told stockholders in an interim report that construction is proceeding satisfactorily at the five new plant sites—Omaha, Neb.; Tacoma, Wash.; Le Moyne, Ala.; Vernon, Calif.; and Reynosa, Mexico.

Millmaster Moves Exec., Sales Offices

Executive and sales offices of Millmaster Chemical Corp. are now located at 295 Madison Ave., New York City 17. Telephone: MUrray Hill 9-1817.

Geo. F. Smith has joined the concern as vice president in charge of a newly formed George F. Smith, Div.

Agronomists Tour O-M Facilities

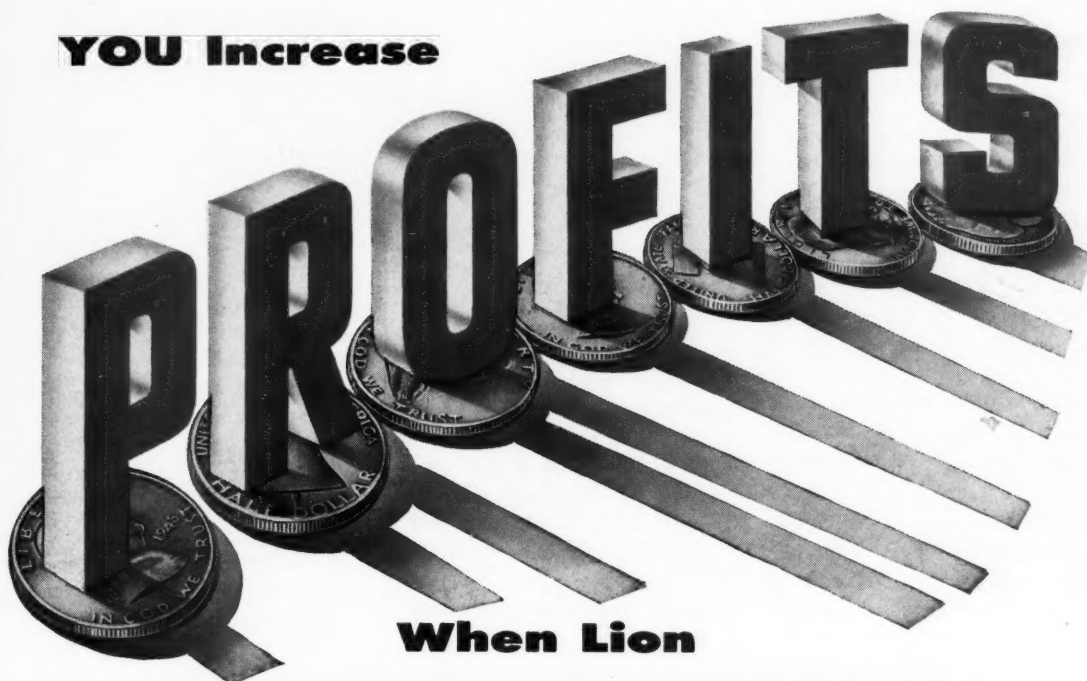


Agronomists from the Great Lakes and Northeast recently visited the Pasadena Ammo-Phos plant of Olin Mathieson Chemical Corp., near Houston. Pictured above left is a group from the Great Lakes district as



they toured the Univ. of Houston Demonstration Farm adjacent to the plant. Shown (above right) as they boarded a private plane at Baltimore for a trip to Houston are soils men from colleges in the Northeast.

YOU Increase



**When Lion
- A Leader in Petro-Chemicals -
Supplies Your NITROGEN NEEDS**

**HERE'S THE LION LINE-UP
OF QUALITY NITROGEN
FERTILIZER MATERIALS**

Lion Anhydrous Ammonia—82.2% nitrogen. Quality guaranteed.

Lion Aqua Ammonia—Ammonia content about 30%—other grades to suit your requirements.

Lion Ammonium Nitrate Fertilizer—Improved spherical pellets. Guaranteed 33.5% nitrogen.

Lion Nitrogen Fertilizer Solutions—Various types to suit your particular manufacturing needs.

Lion Sulphate of Ammonia—White, uniform, free flowing crystals. Guaranteed 21% nitrogen.

Now that the new fertilizer manufacturing season is in full swing, make sure you realize all the profits your plant can produce. *Where you buy your raw materials can be vital and now, more than ever before, it pays to buy your nitrogen needs from Lion—a leader!*

Lion nitrogen products are manufactured under rigid controls to meet exacting specifications—ending the costly production delays that result when ingredients vary in quality from day to day. With Lion products, you produce with maximum efficiency and profit—and you maintain the quality standards your customers demand.

Lion also provides an expert technical staff to assist you in solving difficult formulation and processing problems. And, throughout the year, Lion's sales building advertising tells farmers the plant food story—for your benefit. Lion's leadership in customer service stands out, offering you outstanding opportunities for increased profits—and your best season yet!

DISTRICT SALES OFFICES: NATIONAL BANK OF COMMERCE BUILDING, New Orleans, La. • SHEPHERD BUILDING, Montgomery, Ala

LION OIL

CHEMICAL SALES DIVISION



COMPANY

EL DORADO, ARKANSAS

Commercial Urea- Form on Market

A new division, Nitroform Agricultural Chemicals, has been formed by the Woonsocket Color and Chemical Co., Woonsocket, R. I. to handle sales of ureaform materials through both retail and commercial channels.

For several years the company has been engaged in research on production and performance of these nitrogen sources and has just completed a new production unit.

The retail product, a 38 per cent ureaform nitrogen material, has been trade-named Nitroform and will be marketed through dealers and distributors. Commercial lots, probably representing the first offerings of the chemical to the fertilizer trade in general, will be sold under the generic name of urea-form.

James M. O'Donnell is vice-president in charge of the new division and Phil Rosette has been named general sales manager. Rosette is the former manager of Summers Fertilizers' Kapco Div. and previously headed Kelly Agricultural Products Co.

Pennsalt Granular Unit at Paulsboro

A new Pennsalt granulated fertilizer plant, first in the area, is now under construction at Paulsboro, N. J. Scheduled for completion early next month, it adjoins present facilities at Mantua Point on the Delaware river.

The new facilities are expected to add substantially to domestic distribution of the I. P. Thomas Div., in the eastern seaboard area and, through Pennsalt Interna-

tional Corp., extensive overseas markets are anticipated.

Design of the unit was by Pennsalt's central engineering staff and Unkefer Bros. Construction Co. are the constructors.

NPFI Reports Tonnage Drop

National Plant Food Institute reports 1954-55 fertilizer tonnage at 20,518,180 tons, down 1.52 per cent from 1953-54. However, it looks like another new high in plant nutrient usage, although figures are not presently available.

Consumption appears to have leveled off in the Midwest, NPFI says, and the only significant increases were in the West and, strange as it may seem, New England—up 6.4 and 7.6 per cent respectively.

Tech. Department For IMC Bonnie

Raymond E. Tuttle has been named manager of a new Technical Dept. at International Minerals & Chemical Corp.'s Bonnie phosphate chemicals plant. Responsibilities of the new unit consist of process and quality control, new developments and liaison between corporation engineering and research divisions relative to process problems.

Two former sections, the process engineering group and the chemical control laboratory, form the new department. Tuttle had been chief process engineer at Bonnie for the past year.

Sesamolin Structure Uncovered by Beroza

Dr. Morton Beroza, USDA research chemist, has announced an important advance in work on pyrethrum synergists—determination of the chemical structure of sesamolin.

Earlier studies conducted by Beroza uncovered the effectiveness of sesamolin and it has been found that mixing sesamolin with pyrethrum at a 1:1 ratio increases fly-killing power of the insecticide by 31 times in addition to boosting already potent knock-down ability of pyrethrum.

Present commercial synergists, mixed in a 5:1 ratio, increase effectiveness about 12 times.

The work helps open the way for development of a satisfactory commercial process for extraction of sesamolin from the oil of sesame seed or possible development of a synthetic compound which would duplicate the booster effect of natural sesamolin.

The increasing availability of sesame oil makes it a promising source, and this year about 12 to 15 thousand acres, mostly in Texas and other Southern states, were planted in sesame. New non-shatter strains, suitable for mechanical harvesting, have been developed through USDA-state research and are now being cultivated.

Beroza also reported synthesis of 66 new chemical compounds containing a methylenedioxyphenyl molecular structure, many of them excellent synergists, but none as good as natural sesamolin. Some were superior to the best present commercial synergists.

USDA research has established that pyrethrum synergism is associated with compounds having this molecular grouping, on which are based the best commercial materials.



TRIPLE SUPERPHOSPHATE

- 1. RUN-OF-PILE FOR MAXIMUM AMMONIATION**
- 2. GRANULAR FOR DIRECT APPLICATION**
- 3. PROMPT SERVICE TO MEET EVERY REQUIREMENT**

The source of superior phosphate fertilizers for nearly 30 years, U. S. Phosphoric Products is your ideal source for quality and dependability in Triple Superphosphate. Your Bradley & Baker sales representative will be glad to help you plan your shipments for maximum satisfaction.
Call upon him today.

U.S. PHOSPHORIC
Division
TENNESSEE PRODUCTS
CORPORATION Tampa, Florida



Sales agents:

BRADLEY & BAKER

155 EAST 44th STREET • NEW YORK 17, N. Y.

District Sales Offices:

ATLANTA • INDIANAPOLIS

ST. LOUIS • NORFOLK

HOUSTON

CONSTRUCTION

Shell Installs N. C. D-D Storage Tank

A 1,260,000 gallon storage tank has been installed at Wilmington, N. C., by Shell Chemical Corp., to meet increased Southeast demand for D-D soil fumigant.

The material will be drummed from this storage unit for distribution throughout the area. Shipments for the Carolinas, Virginia, Georgia and Florida formerly had to be made in drums direct from producing plants.

The first tanker shipment for storage in the huge tank was received from Shell's Houston, Tex., plant on October 28.

New Reformer for USI Tuscola Plant

Completion of a new Girdler reforming unit for production of hydrogen from natural gas makes possible full capacity operation of the 150 ton per day ammonia plant of U.S. Industrial Chemicals Co. at Tuscola, Ill., at all times.

USI formerly was dependent on hydrogen from the ethylene production facilities of near-by National Petro-Chemicals Corp.

Convent Facilities At PCB Boron Site

Work has begun at Boron, Calif. to convert present facilities of Pacific Coast Borax Co. to open-pit mining and to construct new concentrating and refining plants. According to PCB, recent developments have made possible recovery of almost the entire ore body by open pit methods.

The new plants will handle all grades and varieties of ore and will produce borate concentrates for export and refined borax for domestic and foreign markets. Refined products have been produced at the Wilmington, Calif.,

refinery which will continue to make boric acid, special borate compounds and 20 Mule Team package products.

About \$18 million will be expended on the new facilities which are expected in operation during the second half of 1957.

Canadian Gulf Oil Plans Sulfur Unit

North West Nitro Chemicals, Ltd., will take a substantial part of the elemental sulfur output of a new plant to be constructed by Canadian Gulf Oil Co., at its Pincher Creek field about 50 miles southwest of Lethbridge, Alberta.

The initial plant, rated at 225 tons per day, will be the largest in Canada and is scheduled for completion in September, 1956. The sulfur and 1,900 barrels of condensate per day will be produced from 500 million cubic feet of natural gas.

Japanese N Plant Contract to CCC

Nihon Gas Kagaku Kogyo KK, Tokyo, Japan, has selected Chemical Construction Corp. to design a nitrogen fertilizer installation incorporating 100 ton per day ammonia plant and 90 ton per day urea unit.

Chemico's full recycle process will be used for urea production and the ammonia plant will utilize high pressure reforming of natural gas.

General Chem. Ups Ill. H₂SO₄ Output

More sulfuric acid will be available from the East St. Louis, Ill., facilities of General Chemical div. by March, 1956, when the current expansion program is scheduled for completion.

A 35 per cent increase in capacity will result from installation of equipment for recovery of acid from oil refinery sludge.

PEOPLE

American Potash & Chemical Corp.

Frank McGrane has joined the General Sales Dept. and will operate from Los Angeles on special assignments. He was previously district sales manager for the Agricultural Chemicals Dept., American Cyanamid Co.



McGrane

Bradley & Baker. L. Paul Campbell has been appointed sales representative at the Norfolk, Va., office. He was formerly with the ACL railroad company.

California Spray-Chemical Corp.

The new position of western regional supervisor, fertilizer sales, has been filled by Wm. E. Jaqua. He will supervise fertilizer sales in the 11 Western states.



Jaqua

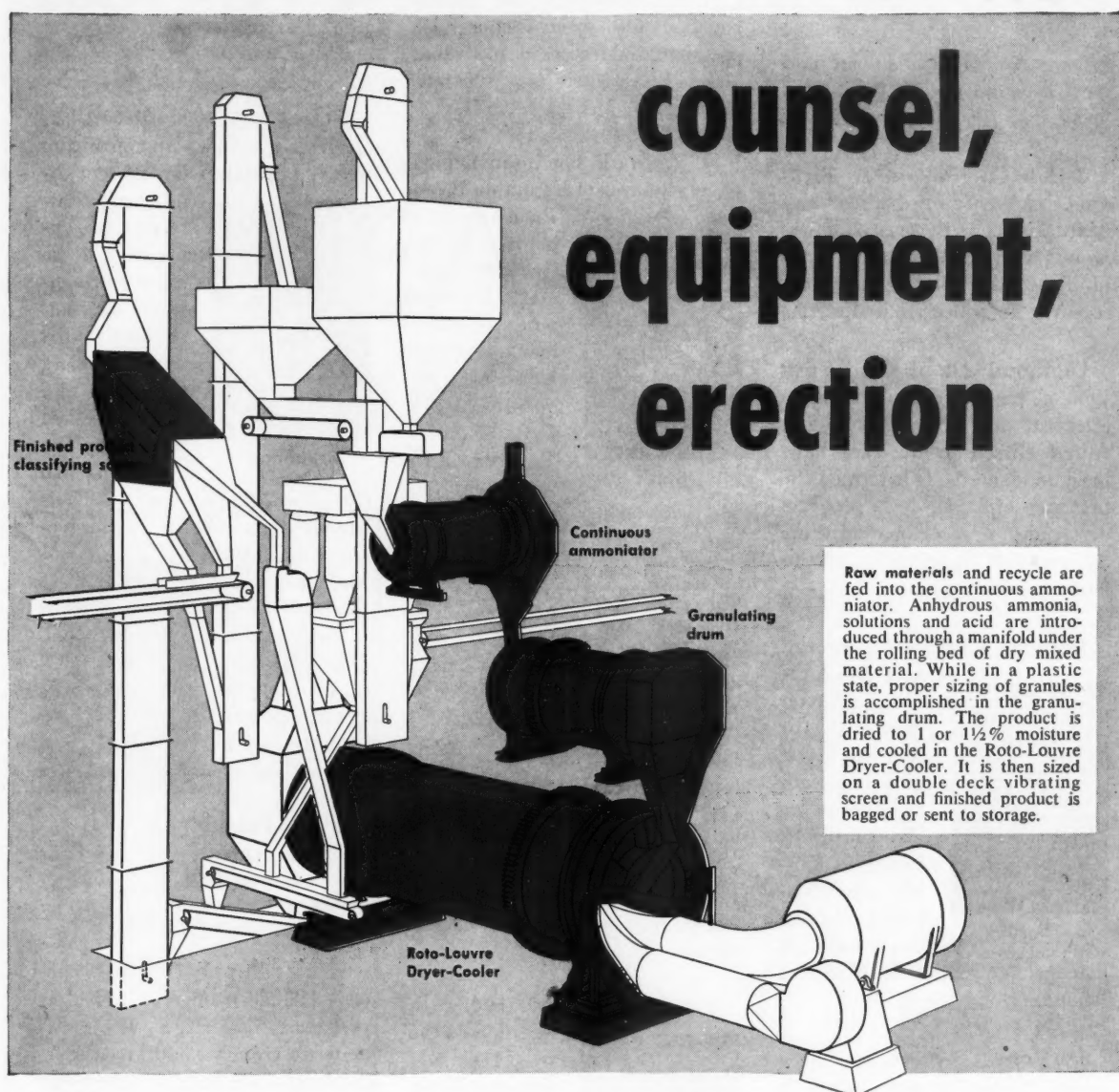
Two new district managers have been named, Cecil M. Crutchfield for the Mississippi Delta area with office in Troy, Ala. and Wallace J. Majure, supervising operations in the Great Lakes area from his office at Maumee, Ohio. Prior to the appointments both were branch managers, Crutchfield in Alabama and Majure in Virginia.

Chipman Chemical Co. E. C. McClintic has been named assistant to the president. He had been a vice president of Pure Carbonic Co.

Consolidated Chemical Industries, Inc. New director of development for (to page 18)

FARM CHEMICALS

For your TVA fertilizer system . . . LINK-BELT supplies



counsel, equipment, erection

Raw materials and recycle are fed into the continuous ammoniator. Anhydrous ammonia, solutions and acid are introduced through a manifold under the rolling bed of dry mixed material. While in a plastic state, proper sizing of granules is accomplished in the granulating drum. The product is dried to 1 or 1½% moisture and cooled in the Roto-Louvre Dryer-Cooler. It is then sized on a double deck vibrating screen and finished product is bagged or sent to storage.

Here's your experienced source for the continuous ammoniator process

The TVA Continuous Ammoniator Process answers the need for a system producing high-grade granular fertilizer with low initial and material costs. An efficient method utilizing anhydrous ammonia and ammonium nitrate solutions, it's adaptable to both new and existing plants. Several installations already have been supplied by Link-Belt, some self-liquidating in a year's production. And Link-Belt offers you complete facilities for design, equipment and erection that assure efficient performance for your plant.

Granular, conventional nitrophosphate, ammonium phosphate, ammonium nitrate, ammo-

nium sulphate, urea—Link-Belt has experience with all of them. Whether you're building a new plant or remodeling your present system, our broad facilities are your assurance of top performance and on-schedule delivery. For details, contact your nearest Link-Belt office.

LINK-BELT



CONVEYING AND PROCESSING EQUIPMENT

LINK-BELT COMPANY: Executive Offices, 307 N. Michigan Ave., Chicago 1. To Serve Industry There Are Link-Belt Plants and Sales Offices in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World.

18,000

... People

(from page 16) the Pacific and New England divisions is C. E. Spear.

d-Con Co. Clarke A. Richards has been named director of education. For the past 20 years he was with the Wisconsin Alumni Research Foundation, most recently as educational director.

Diamond Alkali Co. Creation of the position of research scientist, and promotion of Dr. Alfred Hirsch to the post have been announced. It is termed the first step of a long-term program designed to recognize scientific achievement apart from administrative functions.

Douglas Chemical Co. R.



Byrd

C. Byrd is the new district manager for the Southeast with a territory including the Carolinas, Georgia, Florida and Alabama. He formerly was sales manager for Nelson Brokerage of Atlanta.

Du Pont. Two men have been added to the garden chemicals sales force—James E. Sutcliffe, assigned to the Baltimore-Washington area and George E. Miner, assigned to Western New York.

In a realignment of the Polychemicals Dept. sales organization two directors of sales have been appointed to serve under Elmer F. Schumacher, general director of sales. John H. Daughtridge will oversee sales and technical service on nitrogen products, ammonia and other materials. Russell C. Weigel will be concerned with plastics.

Escambia Bay Chem. Corp.

Its president, M. A. Abernathy died in Shreveport last month. He had also been senior vice president and a director of United Gas Corp., owners of a substantial interest in Escambia Bay.

D. J. Stark has been named plant manager of Escambia Bay's



Stark

Pensacola plant. A native of Canada, he was previously manager of the National Petrochemicals Corp. plant at Tuscola, and worked at the Montreal facilities of Shell Chemical.

Sales manager of the polyvinylchloride division is **Walter W. Peacock, Jr.**, formerly with Naugatuck Chemical Div. and Stanley Chemical Co. He will be temporarily with National Research Corp. at Cambridge, Mass., part owner of the chemical firm.



Peacock

Farm Fertilizers, Inc. In



Hoshall

addition to the position of vice president, Thomas J. Hoshall is now also general manager. He joined the firm in 1950 and has been a vice president for the past two years.

Food Machinery & Chemical Corp., Chemical Divs. New members of the central development dept. include Dr. Lloyd G. Mount, Dr. Julius B. Olin, Jerry J. Sherwood and Richard M. McFarland.

Freeport Sulphur Co. The board of directors has elected Robt. C. Hills executive vice president and director.

Grand River Chemical Div., Deere & Co. Two appointments to the sales staff have been announced. Staf-



Beaubouef

ford Beaubouef will be sales representative in Louisiana and surrounding territory and Bob Gibbs will represent the company in the Iowa-Illinois area. Their headquarters will be in Shreveport and Des Moines respectively.

Beaubouef, a former associate county agent, was previously with Gibbs Implementation Co. and Gibbs served as sales manager for the Falls City plant of Lincoln Service & Supply Co.



Gibbs

Hector Supply Co. New officers include Robert C. Hector, president; Carl Reger, vice president, secretary and treasurer; Adrian Jacobs, vice president and director; and Bob Coleman, controller.

International Minerals & Chemical Corp. Former



Ware

vice president in charge of engineering, Thomas M. Ware, has been elected to the newly created post of administrative vice president. The position will

include respons- (to page 20)

FARM CHEMICALS

ATTENTION FERTILIZER MANUFACTURERS:

NOW YOU CAN USE UREA-FORM IN YOUR MIXES!

**UREA-FORM
NITROGEN
DOES NOT LEACH**

USE IT IN YOUR . . .



USE UREA-FORM INSTEAD OF
ORGANIC NITROGEN IN YOUR
HI-ANALYSIS FERTILIZERS!

AVAILABLE FOR THE 1ST TIME IN COMMERCIAL LOTS!
REPLACES NATURAL ORGANIC NITROGEN AT THE SAME
COST OR LESS PER UNIT . . . LASTS 6 TO 8 TIMES LONGER

NOW, for the first time, Urea-form Nitrogen is available to all fertilizer manufacturers in commercial quantities. This new, long-feeding nitrogen will modernize your product, make it competitive with the best, and yet cost no more. It's completely safe, non-burning, sanitary, odorless and feeds nitrogen evenly through a whole season—selling points that your customers will appreciate.

COMPARE THE COST:

UREA-FORM
NITROGEN
\$6 to \$7
PER UNIT

NATURAL
NITROGEN
\$6 to \$9
PER UNIT

UREA-FORM MAKES A BETTER FERTILIZER BECAUSE
IT IS NON-LEACHING AND FEEDS LONGER!

GET THE FULL FACTS AND PRICES . . .
PHONE, WIRE OR WRITE

NITRO-FORM

AGRICULTURAL CHEMICALS DIVISION
WOONSOCKET COLOR & CHEMICAL CO.

92 Sunnyside Ave.

Woonsocket, R. I.

... People

(from page 18) ability for engineering, purchasing, traffic, marketing and mining and minerals exploration.



White

Norman Into, resigned. Formerly general manager of the division, White has supervised all operations of the division for the last four years.

Replacing White as general manager of the division, is Carl A. Arend, who previously was manager of International's mining and chemical operations at Carlsbad, N. M. He will be located at the Chicago general executive offices.



Arend

Mid-South Chem. Corp. Appointed manager of the Rio Grande div., Linden A. Webb will direct anhydrous ammonia distribution from the new terminal near Harlingen, Tex.

Nitrogen Div., Allied Chem. & Dye Corp. Malcolm E. Hunter has been named assistant to the



Hunter



Colvin

president of the division and Walter S. Colvin, director of agricultural sales.

Hunter will be responsible for sales, succeeding Fred Techter, who has agreed to continue on special assignments, reporting directly to the division president. He has been a sales executive with the division for five years.

Colvin had been northern district sales manager with headquarters at Indianapolis, Ind.

Olin-Mathieson Chemical Corp.

Two sales supervisors have been named for the western fertilizer division, Wilbur T. Kelsey for northern California working from San Mateo and Lee R. Hansen for the Pacific Northwest area with headquarters in Portland.



Hansen

Hansen was assistant professor of agronomy at Oregon State College, assistant division sales manager for Pacific Coast Borax Co. and manager of the L. H. Butcher Co., Agricultural Chemistry Dept.

Dr. Victor L. Sheldon, former assistant professor of soils at the University of Missouri, has joined O-M's Western Fertilizer Div. as agronomist for the north central district.



Kelsey

Kelsey, a former vo-ag teacher, joined O-M in 1952 and has been area sales supervisor of two Arizona counties. Prior to joining the company,



Sheldon



Bingham

Plant Food Corp. Manager of the northern division for the past 15 months, John J. Bingham, has been elected vice president. Under Bingham, sales in the division area have more than doubled, and investment in facilities and equipment has increased substantially.

J. R. Simplot Co., Fert. Div. Promotion of Austin Richins to assistant sales manager has been announced. Prior to the advancement he was purchasing agent and personnel manager of division.

Spencer Chemical Co. Agricultural sales representative for the past five years, C. L. Monson, has been named product sales supervisor working directly under Claude Byrd, agricultural chemicals sales manager.

Four persons have joined the Pittsburg, Kan., Chemical Research Dept.—Paul D. Eddy, staff assistant specializing in inorganic chemistry; Jack D. Taylor, staff assistant specializing in analytical chemistry; Jean Epperly, staff assistant specializing in plant pathology; and Dr. Robt. M. Smith, staff member specializing in physical chemistry.

Summers Fert. Co. Appointment of J. H. McNeill as production manager of the Sioux Falls, S. D., plant has been announced. McNeill spent the past six and a half years at the Maryland Heights plant of Missouri Farmers Assn. where he has been plant superintendent since 1951.



McNeill



NO SOUR GRAPES

Applying modern commercial fertilizers to the soil helps America's farmers bring in a fine crop of sweet, juicy grapes season after season.

Potash, a vital component of these fertilizers, not only enriches the soil, but protects crops against disease and increases yield and quality.

U. S. P.'s high-grade muriate of potash has the highest K_2O content and is free-flowing and non-caking—important advantages in the manufacture of fertilizers that help growers produce sweet grapes, and a sweet profit, too.



REG. U.S. PAT. OFF.

HIGRADE MURIATE OF POTASH 62/63% K_2O
GRANULAR MURIATE OF POTASH 60% K_2O MIN.

UNITED STATES POTASH COMPANY

INCORPORATED

30 Rockefeller Plaza, New York 20, N. Y.

Southern Sales Office

Rhodes-Haverty Building, Atlanta, Georgia



GOVERNMENT

TVA Net Shows Fert. Plant Sales

Although net revenue from TVA power operations for the year ended June 30 rose to \$47.9 million from \$28.8 million the previous year, the agency's fertilizer and munitions development program earned a net income of only \$7,680 compared to nearly a half a million during the previous period.

The decline resulted from a write-off about \$1 million invested in fertilizer production units which were sold during the year.

Production during the 1954-55 year included 192,347 tons of ammonium nitrate fertilizer, 87,758 tons of P_2O_5 in concentrated superphosphate, calcium metaphosphate and fused tricalcium phosphate and 2,980 tons of diammonium phosphate.

Bear Appointed to Conservation Post

Dr. Firman E. Bear, retired chairman of the Rutgers soils department, is one of the 18 persons appointed to the USDA advisory committee on soil and water conservation.

Fertilizer Materials Trial Data from TVA

TVA has released results of an appraisal of three of its fertilizer materials—fused tricalcium phosphate, calcium metaphosphate and ammonium nitrate, by over 2,000 farmers in 17 states.

From 88 to 90 per cent of the responses indicated good to fair crop response with all three materials on small grain, grass, annual legumes, perennial legumes and grass and legume mixtures.

On row crops, good to fair was reported by 89 per cent of fused tricalcium phosphate users, 94 per cent of users of ammonium nitrate and 73 per cent of those applying calcium metaphosphate. The drought was cited by all farmers reporting poor responses.

Storage characteristics were also reviewed with these results: 98.6 per cent of 835 farmers rated fused tricalcium phosphate satisfactory, 1.4 per cent said bags tore; 85.5 per cent of 800 said ammonium nitrate was satisfactory, 12.7 per cent said material "set-up" or hardened, 1.5 per cent said bags tore; 90.5 per cent of 452 farmers considered calcium metaphosphate satisfactory, 5.5 per cent said material "set-up," 4 per cent said bags tore.

Queried on spreading characteristics, satisfactory results were reported by 97 per cent of 835 farmers using fused tricalcium phosphate, 80 per cent of 800 using ammonium nitrate and 76 per cent of 452 applying calcium metaphosphate. Others listed various complaints such as flowing too freely, dusty, etc.

In judging crop response farmers reported good results most frequently with ammonium nitrate on small grains, with fused tricalcium phosphate on perennial legumes and with calcium metaphosphate on grass and legume mixtures. Poor responses were reported most often with ammonium nitrate and with calcium metaphosphate in non-Tennessee valley counties on row crops.

Farmers favored most often the high analysis of calcium metaphosphate (61 per cent) and the quick response to ammonium nitrate but mentioned rusting caused by the latter material as the most common complaint.

Release 1955 USDA Yearbook, "Water"

USDA's 1955 Yearbook, WATER, has been released and is available at \$2.00 per copy from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

The 752 page volume contains 95 chapters written by 149 Federal, state and private specialists and is devoted to drought, floods and the normal sources and uses of water. It is well illustrated with drawings, maps and photographs.

More Research for Screw-worm Control

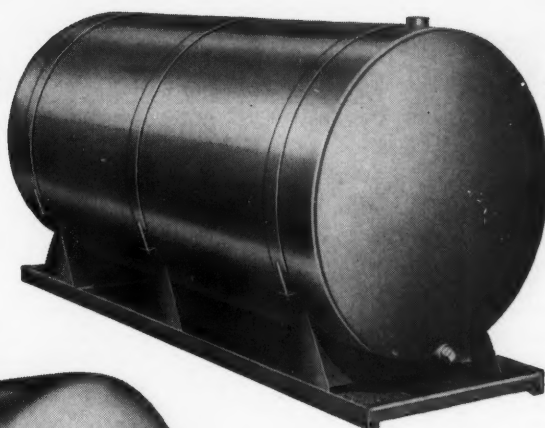
At least two more years of research is needed according to USDA before entomologists can learn if mass release of sterile male screw-worm flies over Florida is worth a try as a practical means of ridding the southeastern US of this pest.

In an experiment concluded last January by USDA workers with the cooperation of the Netherlands West Indies government, screw-worms were eliminated from the Caribbean island of Curacao. Male flies made sterile by radioactive cobalt rays were released from planes flying over the island to mate with wild female flies. They so greatly outnumbered wild male flies that eventually every egg laid failed to hatch.

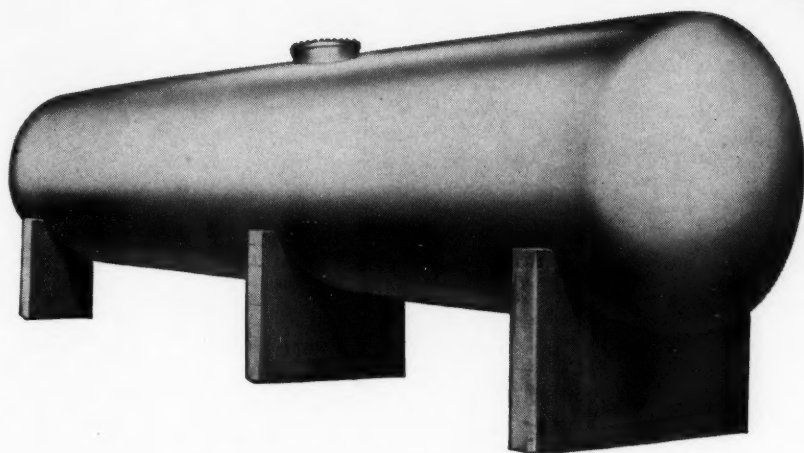
However, an operation on the scale required for control or eradication of the pest in Florida would involve coverage of 50,000 square miles instead of 170, distribution of 50 million sterile flies a week instead of 200,000, establishment and operation of large rearing laboratories and gamma-ray sources, and recruiting of a staff of experienced entomologists and aides.

FARM CHEMICALS

Welded Aluminum— *best tank* *for liquid nitrogen*



3 sizes of skid tanks for transport. 5 sizes of farm tanks.



Bulk storage in 12,000 and 22,000-gal. capacities.

BUTLER *best source for* *aluminum tanks... all popular sizes!*

Not just any aluminum tanks—they're Butler! Get top quality low-pressure tanks—built and tested by Butler tank specialists—guaranteed by Butler. Each tank is engineered with superior strength in stress areas. And Butler supplies the sizes of low-pressure tanks your business needs. Bulk storage tanks

in 12,000 and 22,000-gal. sizes. Skid tanks for transport in 500, 830, and 1000-gal. sizes. Rugged detachable skids have rubber lined straps to protect metal. Farm storage tanks are available in 100, 270, 500, 830, and 1000-gallon sizes. Mail coupon to Butler now for complete information.



**Manufacturers of Oil Equipment
Steel Buildings • Farm Equipment
Dry Cleaners Equipment • Special Products**

Factories at Kansas City, Mo. • Minneapolis, Minn.
Galesburg, Ill. • Richmond, Calif.
Birmingham, Ala. • Houston, Tex.

For prompt reply address office nearest you:

BUTLER MANUFACTURING COMPANY

7455 East 13th Street, Kansas City 26, Missouri
955 Sixth Avenue S.E., Minneapolis 14, Minnesota
1055 Avenue W, Ensley, Birmingham 8, Alabama
Dept. 55, Richmond, California

Send me more information on the following sizes of Butler low-pressure aluminum tanks.

Name

Firm

Address

City Zone State

Associations & Meetings

Two Day Charter Meeting for WSA

Highlighting the Charter Meeting of the Weed Society of America on January 4-5 in the Hotel New Yorker, New York City, will be discussion of the economic problems caused by weeds and progress in weed control in the US, Canada and Great Britain. Host for the affair will be the Northeastern Weed Control Conference whose annual meeting will be held on January 6.

On the program for the first day is a discussion of weed control problems, progress and organization in the three countries, talks on weed control in American agriculture, industry's views on modern weed control and weed control educational problems in the US. A paper on mechanisms of herbicidal action is also scheduled.

Sectional meetings on various phases of weed control will be

held on the second day.

R. H. Beatty, American Chemical Paint Co., is serving as president during the organizational period and other officers include W. B. Ennis, Jr., USDA, vice president, and W. C. Shaw, USDA, secretary-treasurer.

Present plans call for a meeting of the national group every two years with one of the four regional conferences serving as host.

On the program for the Northeast group are panel discussions of new developments in weed control followed by a research coordinating committee report and a business meeting.

Annual Meeting for GPFES at Athens

The 1956 annual meeting of the Georgia Plant Food Educational Society will be held on January 17, at the University of Georgia, Athens. It will be a joint session with the state ASA unit.

Plans Announced for Miss. Insect Meet

A. G. Bennett, extension entomologist at Mississippi State College, announces that the 2nd annual Mississippi Insect Control Conference will be held at the college, January 5-6.

Highlighting the affair will be discussions of the Miller bill, the seeming build-up of resistance to insecticides by some crop pests, and Mississippi insect control research. K. P. Ewing, USDA, will address the group on latest developments in the use of systemics in cotton insect control and live-stock parasite control.

The annual meeting of the Mississippi Entomological Society will be held in connection with the conference and 1956 officers will be elected.

Crolius Leaves NPFI Post, Joins N. Div.

Peter C. Crolius has resigned as editorial assistant for the National Plant Food Institute to become agricultural writer for Nitrogen Div., effective December 5. He joined NPFI last year and served as assistant editor of the *Plant Food Review* and managing editor of the *Weekly News Report*.

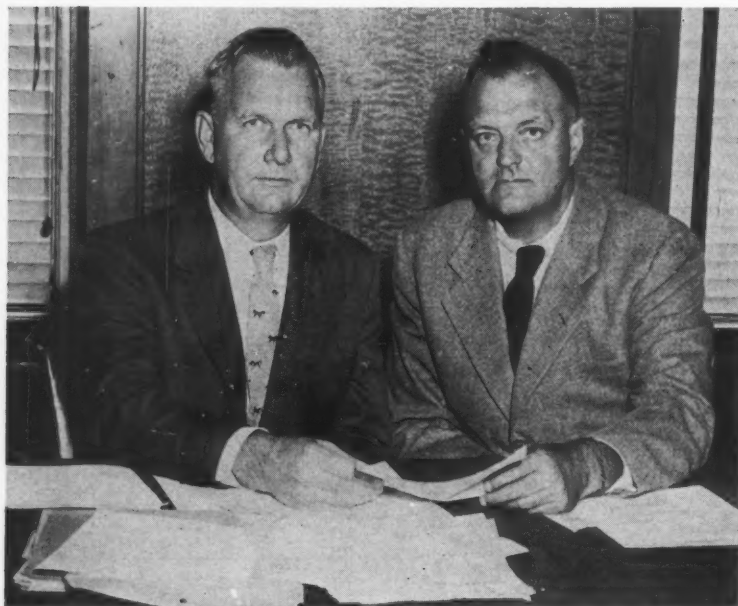
In his new position he will be associated with Allied Chem. & Dye's John Waugh, director of advertising and Joseph B. Martin, Public relations assistant.

Proceedings Issued By Mosquito Group

The Proceedings of the 42nd annual meeting of the New Jersey Mosquito Extermination Association has been printed, according to Dr. Bailey B. Pepper, executive secretary. Papers by 41 experts are included.

Copies can be obtained from the Department of Entomology, Rutgers University, New Brunswick, or from N. J. county mosquito extermination commissions.

FARM CHEMICALS



John D. Van Geluwe, pres., NE Weed Control Conf., and Robert H. Beatty, WSA pres., review plans for the forthcoming Weed Society of America meet.

Berkshire

... specialists in
magnesia for agriculture

EMJEO (80/82% Magnesium Sulphate)
Calcined Brucite (fertilizer grade) 70% MgO
Calcined Magnesite 85 to 95% MgO

POTNIT

(95% Nitrate of Potash)
for

Special Mixtures and Soluble Fertilizers
Other Fertilizer Materials

INSECTICIDES—FUNGICIDES

Mercury Compounds
for Agricultural Use

DITHIOCARBAMATES

Ferric—Zinc

Export

Import

Berkshire Chemicals, Inc.

420 Lexington Avenue, New York 17, N. Y.

Cable Address—"Berksem" New York

55 New Montgomery St., San Francisco 5, California

STEDMAN

FERTILIZER PLANT EQUIPMENT

Established in 1834

All Steel Self-Contained Fertilizer Mixing
and Bagging Units

Batch Mixers — Dry Batching

Pan Mixers — Wet Mixing

Tailings Pulverizers — Swing Hammer and Cage Type

Dust Weigh Hoppers

Vibrating Screens

Acid Weigh Scales

Belt Conveyors — Stationary and Shuttle Types

Bucket
Elevators

Batching Hoppers

Hoppers
and Chutes

STEDMAN FOUNDRY & MACHINE COMPANY, INC.

Subsidiary of United Engineering and Foundry Company

General Office & Works: AURORA, INDIANA

MR. FERTILIZER EXECUTIVE:

We know it is your desire and purpose to provide your customers with the most efficient fertilizer your "know how" and agricultural science indicates . . . BUT are you accomplishing this?

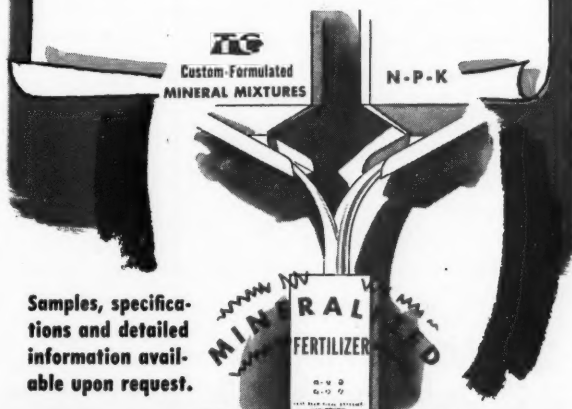
To answer YES, your fertilizer should contain ADEQUATE CONCENTRATIONS in a READILY AVAILABLE FORM of the ESSENTIAL TRACE ELEMENTS such as Copper, Manganese, Zinc, Iron, Magnesium and Boron.

If the essential trace elements are not present in adequate concentrations, you are not offering your growers a COMPLETE PLANT FOOD.

Join the ranks of the LEADING PROGRESSIVE FERTILIZER MANUFACTURERS . . . BOOST your SALES and FURTHER the MIXED GOODS INDUSTRY by manufacturing even better mixed fertilizers.

MAKE YOUR CUSTOMERS THE BEST PRODUCT POSSIBLE

Let TENNESSEE CORPORATION talk with YOU about our MINERAL MIXTURES program. The INEXPENSIVENESS and EASE of adding TRACE ELEMENTS should not be overlooked by progressive, PROFIT minded management.



Samples, specifications and detailed information available upon request.

TENNESSEE **TC** CORPORATION

617-29 Grant Building, Atlanta, Georgia

Montreal Picked for Entomology Congress

Montreal will be the site of the 10th International Congress of Entomology with meetings scheduled for McGill University and the University of Montreal, August 17-25.

J. A. Downes, secretary, reports that visiting entomologists will be taken to visit research centers in all parts of Canada and that sections of the formal programs have been arranged to include all phases of entomological science.

This will be the second congress held outside of Europe; the previous occasion was in 1928 when it met at Cornell. It is expected that registration will be well over the 800 who attended the last congress which was held in Amsterdam in 1951. Letters of application, says Downes, have already been received from entomologists of 41 countries.

MCA Schedules 1956 Chem. Progress Week

Manufacturing Chemists' Association has scheduled April 23-28 for the 3rd annual Chemical Progress Week. The program will be national in scope with emphasis on local-level activities.

CFA Scholarships To Calpoly Students

Two California State Polytechnic College agricultural students have been awarded \$100 scholarships by the Soil Improvement Committee of the California Fertilizer Association. CFA Director Howard H. Hawkins and Sidney H. Bierly, exec. secretary and manager, made the presentation.

Colo. ACA to Meet In Denver, Jan. 27

Annual meeting of the Colorado Agricultural Chemicals Association is scheduled for January 27

in the Cosmopolitan Hotel, Denver, according to W. D. Smith, chairman of the CACA publicity committee. Officers of the group include Fred Chery, pres.; Ralph Farr, vice pres. and Orval Schall, sec.-treas.

K. D. Jacob Elected President of AOAC

K. D. Jacob, USDA, was elected president of the Association of Official Agricultural Chemists at the recent Washington meetings, succeeding W. F. Rein-dollar, Maryland. M. P. Ether-edge, Mississippi, was named vice president and Dr. William Hor-witz was re-elected secretary-treasurer.

Date Set for 8th N. C. Pesticide School

January 10-11 are the dates for the 8th annual North Carolina Pesticide School to be held in the College Union Bldg. at N. C. State College, Raleigh. On the program are reports and talks covering weed control, nematodes, insect control, research developments, major changes in control recommendations for 1956 and a variety of other subjects.

The fee is \$4.00 per person for all but county agents, vo-ag teachers and farm superintendents. For a copy of the program and advanced registration form write the Division of College Extension, Box 5125, Raleigh.

Calendar

Dec. 5-9. Exposition of Chem. Industries, Convention Hall, Philadelphia, Pa.

Dec. 5-7. Agric'l Ammonia Institute, Kansas City, Mo.

Dec. 5-7. Chemical Specialties Mfrs. Assn., annual convention, Roosevelt hotel, New York City.

Dec. 8-9. Michigan Fert. & Lime conference, Michigan State College, East Lansing.

Dec. 15-16. Beltwide Cotton Prod. conf., Hotel Peabody, Memphis, Tenn.

Dec. 28-30. American Phytopathological Society of America, Atlanta, Ga.

Dec. 29. Symposium on Health Hazards of Chemicals, Pharmacy Section, annual meeting, American Assn. for Advancement of Science, Atlanta, Ga.

Jan. 4-6. Weed Society of America charter meeting, Hotel New Yorker, New York City.

Jan. 5-6. Mississippi Insect Control Conf., Miss. State College.

Jan. 10-11. North Carolina Pesticide School, Raleigh.

Jan. 11-12. Wisc. Insect Control Conf. with Industry, Lorraine Hotel, Madison.

Jan. 16-18. N. W. Vegetable Insect Control conference, Imperial Hotel, Portland, Ore.

Jan. 16-18. Southern Weed conf., 9th annual meeting, Hotel Jung, New Orleans, La.

Jan. 18-20. Western Coop. Spray Project, Imperial Hotel, Portland, Ore.

Jan. 24-26. Midwestern Garden Supply Trade Show, International Exposition hall, Chicago.

Jan. 26-27. Custom Spray Operators Training School, Univ. of Ill., Ill. Union Ballroom, Urbana.

Jan. 26-29. Agric'l Aircraft Assn., 6th annual convention, Wilton Hotel, Long Beach, Calif.

Jan. 27. Colo. Agr. Chemicals Assn., Cosmopolitan Hotel, Denver, Colo.

Feb. 6. Tennessee Seedmen's Assn., Andrew Jackson Hotel, Nashville.

Feb. 6-8. Agronomy Section, Assn. of Southern Agr. Workers, Biltmore Hotel, Atlanta, Ga.

Feb. 6-8. Cotton States Branch, ESA, annual meeting, Biltmore Hotel, Atlanta, Ga.

Feb. 7-9. N. Y. Garden Supply Trade Show, Kingsbridge Armory, New York City.

Feb. 15-17. Calif. Weed Control conf., Sacramento & Davis, Calif.

Feb. 15-17. Western Weed Control conf., Sacramento & Davis, Calif.

Feb. 20-21. Southwestern Branch, Entomological Society of America, Ft. Worth, Tex.

March 6-7. Western Cotton Production Conf., Fresno Hacienda, Fresno, Calif.

March 14-18. National Agric'l Chemicals Assn., spring meeting, Hollywood Beach Hotel, Hollywood, Fla.

March 28-30. North Central Branch, ESA, Purdue Memorial Union, Lafayette, Ind.

Pipeline

from an ocean of brine...

BORAX

Sodium Tetraborate,
technical 99.5% $\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$
in coarse and fine granular
and powdered grades
BORIC ACID
PYROBOR®—Dehydrated Borax
V-BOR®—Refined
Pentahydrate Borax

From fabulous Searles Lake at
Trona, California, come
basic chemicals indispensable
to Industry and Agriculture.

POTASH

Agricultural Muriate
95-98% KCl,
Chemical Muriate 99.5% KCl,
and Sulphate 95-98%
 K_2SO_4

American Potash & Chemical Corporation

Offices: 3030 West Sixth Street, Los Angeles 54, California
99 Park Avenue, New York 16, New York
214 Walton Building, Atlanta 3, Georgia
Export Division 99 Park Avenue, New York 16, New York
Plants Trona and Los Angeles, California;
San Antonio, Texas



SODA ASH

Sodium Carbonate,
technical 99.2% Na_2CO_3
58% Na_2O in
granular and fine
granular grades

SALT CAKE

Sodium Sulphate
Anhydrous, 97.0%
 Na_2SO_4 minimum, in
regular and industrial
grades

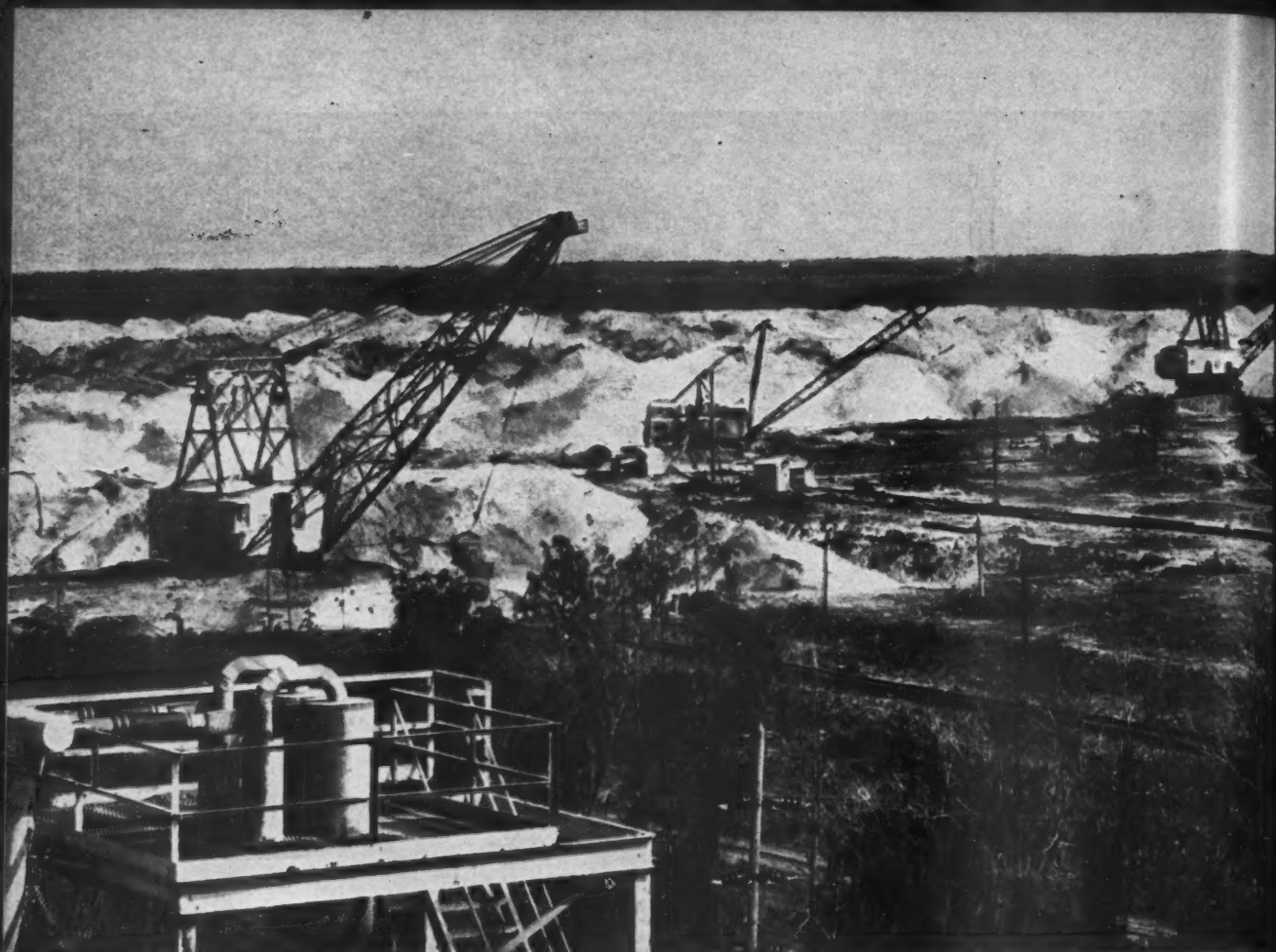
LITHIUM

Lithium Carbonate,
Lithium Chemicals,
Lithium Ores



*Trade Mark AP&CC

Producers also of—BROMINE CHEMICALS, and a diversified line of specialized agricultural, refrigerant and industrial chemicals
DECEMBER, 1955



Three of the A.A.C. Co's electrically-operated draglines at work at our phosphate mines in Central Florida. Bucket capacities range from 9½ to 17 cubic yards. The 17-yard draglines with their 175-foot booms each weigh more than a million and a half pounds and can move 35,000 tons of material in 24 hours. From these rock deposits flow a continuous stream of high quality phosphate rock, assuring a dependable source of supply of AA QUALITY phosphorus products, see list below.



AA Quality...

for over 85 years a symbol of quality and reliability



From the air—wet rock storage and drying plant, with dry rock storage silos in background. These silos, 29 in number, have a total capacity of 40,000 tons of dried rock. Under the silos are four runways where 40 railroad cars can be loaded at a time.

principal AA QUALITY products

All grades of Florida Pebble Phosphate Rock

AA QUALITY Ground Phosphate Rock

All grades of Complete Fertilizers Superphosphate

Gelatin Bone Products Salt Cake Ammonium Carbonate

Sulphuric Acid Fluosilicates Insecticides and Fungicides

Phosphoric Acid and Phosphates

Phosphorus and Compounds of Phosphorus

THE AMERICAN AGRICULTURAL CHEMICAL COMPANY

GENERAL OFFICE: 50 CHURCH STREET, NEW YORK 7, N. Y.

30 FACTORIES AND SALES OFFICES, SERVING U.S., CANADA AND CUBA—ASSURE DEPENDABLE SERVICE

VIEWING WASHINGTON

with John Harms

on agriculture

Bushelage and poundage controls on farm production are now actively considered by USDA. Despite the toughest acreage controls that can be set to cut mounting surpluses, farmers have come up with a record total production this year.

Farmland yields are phenomenal. The government's all-crop yield index is a whopping 9 per cent higher than the previous (1948) record. Most crops have higher yields than last year, many are above average; all are led by cotton with an amazing 431 pounds/acre, 90 pounds over the previous high.

Controls on crop units pose a very real threat to fertilizer markets. If they actually were installed, they would likely be put on cotton, tobacco, rice and peanuts as well as wheat. Cotton, however, is the outstanding probability because of the tremendous surplus—growers produced a crop about 45 per cent above the Government goal.

You get an idea of why the government is even considering this drastic approach from these comparisons: Cotton supply is about 26 million bales, almost enough to supply the needs of the entire free world for one year. The rice supply of 80 million hundredweight is almost enough to feed the domestic market for three years; there's enough wheat on hand for more than two years, enough burley tobacco for 3½ years and enough corn to supply feed needs for at least a year and a half.

Another production year like 1955—or one anywhere close to it—could easily break down the price support program (\$7 billion in Federal funds already invested in it) and bring disaster to farm markets next fall—just ahead of the presidential election. On both counts, the Administration must do something pretty drastic.

What are the chances for bushels-pounds controls? Actually, very little. While some USDA officials advocate this as the only way to get at the heart of surplus production, Administration policy makers are bucking it—viewing the danger of widespread farm resentment in an election year.

What other approach is there? Cross-compliance. This will probably be the route taken by Government. Secretary Benson backed down on this two years in a row, but it's a strong possibility for 1956.

Under cross-compliance, farmers must comply with less-acre edicts of the Government on all crops, or forfeit price supports on any crop. While this doesn't get at the yield "program," it does have the effect of getting more farmer compliance, thus holding down production to some extent.

Production, or compensatory payments to farmers are getting a bigger boost now than when former secretary Charles Brannan proposed them. Support for this approach comes from some surprising places now-a-days.

The National Planning Association, a so-called non-profit and non-political organization, backs production payments on a trial basis, at least. NPA says they would likely have much greater effect than present Government purchases and storage operations. Farmers would be paid directly the difference between a fixed "fair" parity price and the average market price.

Production payments now are made on wool and, if such a system is widened, it will probably be used first on livestock, not field crops. Any such change, however, would have to be made by Congress.

VIEWING WASHINGTON with Harms

on business

The general trend of business now probably is heading to a peak, officially expected in the first quarter of 1956. Sometime before mid-year, adjustment from the boom is expected. Not a sharp downturn—only a shifting of gears from boom to mild adjustment.

Overall outlook for 1956 is for business to average out at about 1955 levels, with a slight plus advantage. The new year, according to the Washington view, will differ from 1955, which saw a steady climb, by bringing a relative stability, a moving off the climb.

Business investment in new plant and equipment will average higher in 1956—with estimates ranging between 10 and 15 per cent above the 1955 average. Manufacturers as a group plan investment outlays next year 30 per cent larger than in 1955.

1955 investment outlays in early fourth quarter are pushing even higher than the record-level third quarter rate. Investment in plant and equipment was at a record annual rate of \$29 billion in third quarter—up 13 per cent from the low in first quarter. Further moderate increase in investment was scheduled for fourth quarter—durables up about a fifth from first quarter rate, non-durables up an eighth.

Chilean nitrate industry is expected to get sizeable assistance from the Export-Import Bank. At press time, the bank was actively considering two loans—one to Cia. Saliterra Anglo-Lautaro, a principal Chilean producer predominantly owned by U. S. interests, and the Tarapaca & Antofagasta Nitrate co., a Chilean-owned operation.

Saliterra Anglo-Lautaro proposes a program involving expenditures of \$25 million over a five-year period for expansion and modernization. Export-Import Bank has been asked to aid in financing the dollar costs of the first stage of the program during which about \$14 million will be spent.

Small companies are being promised a "fair share" of Government business. The Small Business Administration and General Services Administration have launched a cooperative program which will make it possible for small firms to bid on Government requirements. GSA buys about \$460 million worth of goods and services annually.

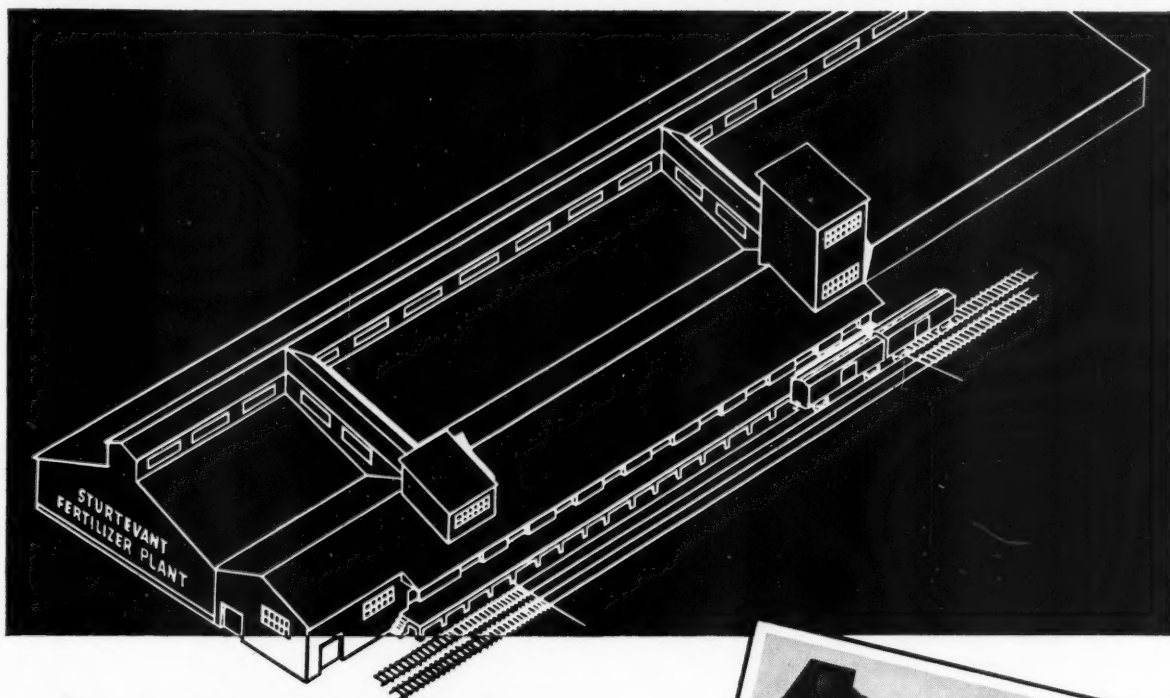
A guide to obtaining equity capital for small businesses is now available on request at Small Business Administration field offices. The leaflet explains opportunities for smaller firms to obtain operating capital by offering securities rather than by borrowing money.

Antibiotics for meat preservation was scheduled to be approved by Food & Drug Administration shortly after press time. Approval was forthcoming for Aureomycin at a residue tolerance of 10 parts per million. A certificate of utility had been issued with the way cleared for full approval. Aureomycin, manufactured by American Cyanamid Co., will be used first on processed poultry, under the pending approval. Trade name: Acronize.

Meat Institute approval of using antibiotics reportedly has been obtained. The Institute apparently had some objections on antibiotic use for beef. No beef and fish-use applications are pending before FDA, but it's expected to be only a matter of time, insiders predict. Charles Pfizer Co., another major antibiotic maker, is expected to apply for a food preservation permit for its product, Terramycin, soon.

LARGE OR SMALL

STURTEVANT builds them all...

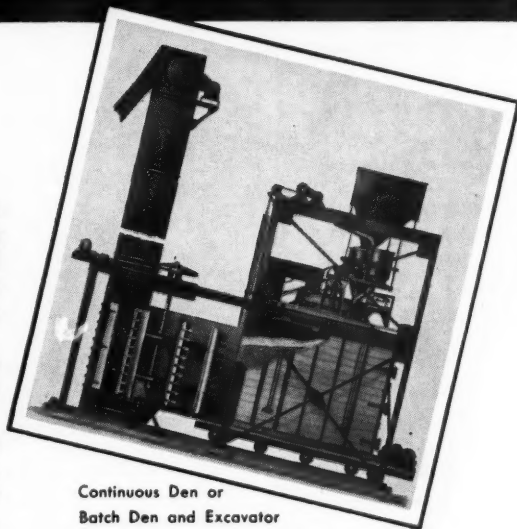


Each designed to produce maximum Fertilizer output

For over 71 years, Sturtevant Mill Company has been closely associated with the fertilizer industry . . . designing and supervising the construction of complete plants, and building quality machinery from individual machines for specific applications to complete processes, that speeds up fertilizer output, reduces overall production costs.

A recognized leader in the industry, Sturtevant Mill with its vast fertilizer manufacturing experience and know-how can effect operating economies for you.

Whether you plan to build a new plant, modernize or buy new equipment, it will pay you to consult Sturtevant Mill. Our engineers, specialists in fertilizer manufacture, are available for consultation. Ask for their services, today. You will keep ahead with Sturtevant.



Continuous Den or
Batch Den and Excavator
for producing superphosphate.

STURTEVANT MILL Company

132 CLAYTON STREET, BOSTON 22, MASSACHUSETTS

Designers of Complete Plants and Manufacturers of: CRUSHERS • GRINDERS • SEPARATORS • CONVEYORS • MECHANICAL DENS and EXCAVATORS • ELEVATORS • MIXERS

DECEMBER, 1955

31

Presenting
THE MOST MODERN
BAG PRINTER

Manufactured in
One, Two, Three and Four Colors for
printing made up bags of Paper,
Cotton and Burlap, new or used.



Let us send you complete information with descriptive literature.

SCHMUTZ
MFG. CO.
18th and Main Streets
Zone 3
Louisville, Ky.

Cable Address "SCHMUTZ"—Long Distance Phone CLAY 7771

Chemicals

423—Nitro-Form

For the first time, ureaform is available in commercial lots! Nitroform Agr. Chems. Div. is producing the material for use in your mixes and points out that it will make your product competitive with the best without a cost increase. Completely safe, it does not burn, is odorless and feeds nitrogen evenly throughout the season. For full information and prices

CIRCLE 423 ON SERVICE CARD

424—Fert. Solutions

Monsanto is still offering its popular book on concentrated water soluble fertilizers. Products available from the company include di- and mono-ammonium phosphate, phosphatic fertilizer solution, di- and mono-potassium phosphates. These highly concentrated materials cost less to handle and store and are pure to give you extremely close control of formulation. For a copy of the booklet

CIRCLE 424 ON SERVICE CARD

425—Sohio Nitrogen

Shipments of nitrogen will begin at Sohio Chemical's new Lima, Ohio, plant on January 1st. The facilities are already producing anhydrous ammonia, aqueous ammonia, nitrogen solutions, urea solutions and nitric acid for stockpiling until that date when shipments against contracts will commence. For complete product listing and price quotations

CIRCLE 425 ON SERVICE CARD

426—Maine Nitrogen

Northern Chemical Industries is now contracting for delivery of anhydrous ammonia and 41 and 49 per cent nitrogen solutions during the second quarter of 1956. The materials will be produced at its plant now under construction at Searsport, Me. For information

CIRCLE 426 ON SERVICE CARD

427—Hynite Tankage

Hynite tankage with natural organic nitrogen is produced by United Fertilizer from high grade animal matter, processed and sterilized for quality and uniformity. The company claims unusually favorable analysis with high nitrogen content, high availability and low water solubility. For prices and literature

CIRCLE 427 ON SERVICE CARD

428—Toxisols

Higher formulation yield and reduced formulation costs are two big advantages claimed for Richfield Oil's Toxisol A and B solvents. For prices, tests and specifications on these two highly efficient pesticide additives

CIRCLE 428 ON SERVICE CARD

DECEMBER, 1955

FREE INFORMATION to help you
solve fertilizer, pesticide problems

Reader Service

429-433—Micro-Cel

A new line of synthetic calcium silicates has been developed by Johns-Manville for use in production of wettable powders. Trade-named Micro-Cel they offer high absorptive capacities, large surface area, small particle size and excellent dry-flow properties. Micro-Cel is designed specifically for production of free flowing, high percentage concentrates with either dry, viscous or liquid poisons. Formulators only can obtain information and samples of Micro-Cel for the following specific applications:

Circle

- 429—15% Aramite
- 430—75% Dieldrin
- 431—75% DDT
- 432—50% Heptachlor
- 433—70% Toxaphene

435—Krisp Chips

Commercial quantities of DDT Krisp Chips are now produced by Montrose Chemical and are offered by R. W. Greeff. This new type of DDT material features good grindability, excellent solubility and low price and are recommended for both dust and liquid solutions. For prices and samples, formulators can

CIRCLE 435 ON SERVICE CARD

436—Moly Review

Climax Molybdenum has available, in reprint form, the comprehensive review of industrial applications of molybdenum chemicals published recently by ACS. It includes seven papers detailing the wide use of moly in diverse chemical fields, including its value as a plant nutrient.

CIRCLE 436 ON SERVICE CARD

How to use the READER SERVICE CARD

- Circle number of literature you want.
- Print or type your name, position, company and address.
- Clip and mail the Service Card.

Process Equipmt.

437—Munson Mixer

The exclusive 7-way mixing action of Munson rotary batch mixers assure accuracy of blend without grinding or reducing size of ingredient particles. Available in capacities from 20 to 250 cu. ft., the basic design of these units can be altered to fit your requirements. Internal spray can be provided for introduction of limited amount of liquid. For complete details

CIRCLE 437 ON SERVICE CARD

434—Formulators Aid

Another new booklet has been produced by Antara Chemicals and this one is of special interest to pesticide formulators for it covers Antara surfactants in insecticides and herbicides. The booklet contains typical starting formulations for emulsifiable concentrates and wettable powders and is designed to aid you in developing top products. For a copy, formulators can

CIRCLE 434 ON SERVICE CARD

438—Portable Dryer

The Ruggles-Coles XH-XF pilot plant or laboratory rotary dryer, available from Hardinge, is described in a new two page data sheet. Applicable for a variety of uses it is a single shell, direct fired unit with evaporative capacity up to 40 pounds per hour. Both speed of rotation and slope can be varied to regulate the material flow rate. For information

CIRCLE 438 ON SERVICE CARD

439—Liquid Ferts.

Complete equipment, data and training for production and sales of liquid mixed fertilizers is provided by Midstate Machinery Co. A complete package deal with plants in capacities from 15 to 30 tons/hour includes all needed equipment, cost data, chemical formulas, training, merchandising aids and sources of supply. For your local trade area, a 15 ton/hour plant is available priced at \$9,737 f.o.b., nitrogen storage additional. For information

CIRCLE 439 ON SERVICE CARD

440—Kady Mills

A new catalog of Kady dispersion mills has been issued by Kinetic Dispersion. Illustrated with photos and working drawings, it provides complete descriptions, performance data, physical data and specifications. Units range in tank capacity from a one gallon lab model to 210 gallons.

CIRCLE 440 ON SERVICE CARD

Materials Handling

441—HA Payloader

The 1955 Hough HA Payloader offers the biggest capacity in its class (18 cubic feet) and features powerful break-out action 40 degree bucket tip-back that digs heaped bucket loads easily. Loads are carried close and low for fast transport without spillage. Increased power, torque converter drive and powerful hydraulic brakes help provide top performance. For data

CIRCLE 441 ON SERVICE CARD

442—Carriers & Trippers

Standard belt conveyor carriers and trippers are covered in a new Stephens-Adamson bulletin. A number of special carrier units are also catalogued along with accessory equipment such as guide rolls and special tripper spouts. A new addition to the S-A line is a long center roll carrier with either 35 or 45 degree slope end rolls for greater carrying capacity on light materials. For a copy of the bulletin

CIRCLE 442 ON SERVICE CARD

443—Clark News

The latest edition of Clark Equipment's MATERIAL HANDLING NEWS is now available. A two-color, 24 page magazine it includes studies of handling techniques in 10 industries, illustrations of unusual fork truck applications and descriptions of new equipment. For a copy

CIRCLE 443 ON SERVICE CARD

444—Sauerman Report

Handling of potash in indoor storage at Carlsbad is described in a new Sauerman Bros. field report. It is illustrated with layout drawings and pictures of facilities of two major producers. For a copy

CIRCLE 444 ON SERVICE CARD

445—DS Takeup

An improved DS takeup from Link-Belt is interchangeable with previous designs used on a variety of belt, chain, apron and other types of conveyors. Positive, simple adjustment is permitted by a new one-piece hinged top frame which allows easy access to bearing block and adjusting screw. The top swings upward after three bolts are removed from the base. Strength is added to end brackets by a new arch-frame design. For complete data with dimensional charts

CIRCLE 445 ON SERVICE CARD

446—Chains & Wheels

Dura-Tred chains and Beaumont drive wheels are discussed in detail in a new Beaumont Birch catalog. Included are lists of available chains with various metals from which they can be made and tables of relative corrosion resistance and physical properties. Full details on drive wheels incorporate pitch diameter, bore and weight data. For a copy

CIRCLE 446 ON SERVICE CARD

Application and Storage

447—Bulk Storage

Bulk storage aluminum tanks from Butler Mfg. feature top quality. Available in 12,000 and 22,000 gallon sizes, each unit is engineered with superior strength in stress areas. For information

CIRCLE 447 ON SERVICE CARD

448—Duo-Tested Tanks

For storage, application and transport of anhydrous ammonia, Charlotte Tank offers Duo-Tested tanks of all steel, welded construction. Available for stationary or truck mounting or on skids, they have designed working pressures of 250 or 265 lbs. psig. Storage tanks are produced in 500 or 1,000 gallon capacities, applicator units in 65, 100 or 150 gallon capacities. For full details and prices

CIRCLE 448 ON SERVICE CARD

449—Rubber-lined Tanks

Abrasion & Corrosion Engineering offers low-cost, dual-purpose tanks for economical and efficient storage of liquid fertilizers. The rubber lined units assure complete corrosion protection from both phosphoric acid and nitrogen solutions. For complete information

CIRCLE 449 ON SERVICE CARD

450—N Sol. Units

A complete line of custom and standard equipment for application and transport of nitrogen solutions is produced by General Metals. Pressure and non-pressure tanks are available in a variety of sizes and types along with aluminum stainless parts, fittings, all accessories and engineering services. For full details on the General Metals line

CIRCLE 450 ON SERVICE CARD

451—Kalamazoo Storage

Vitrified glazed tile industrial storage bins produced by Kalamazoo Tank & Silo are described in a new four page folder. It describes typical installations of these units and the two sizes of tiles available for construction of silos in a wide variety of shapes and sizes.

CIRCLE 451 ON SERVICE CARD

Miscellaneous

452—West Coast Facilities

Associated Sales & Supply offers West Coast chemical manufacturing, warehousing and shipping facilities designed to reduce your shipping expenses and to speed deliveries in that area. Its recently acquired Oakland plant has facilities in excess of AS&S needs, permitting private label, formulation, packaging and shipping services for chemical specialties lines of a limited number of firms. If interested

CIRCLE 452 ON SERVICE CARD

453—Vinyl Coating

A vinyl protective coating, Amercoat No. 87, can be applied at 10 mils thickness in a single double-pass spray coat without sacrifice of chemical and moisture resistance. It is easily applied with conventional spray equipment and does not flow away from edges and sharp corners. For complete information

CIRCLE 453 ON SERVICE CARD

See pages 54 and 56 for information
on these Reader Service numbers—

454—Ful-Pac Line

457—Tape Repairs

455—Glassware Washer

458—Flexi-Liners

456—J-M Scrubber

459—EWP Panelboards

AAPCO Hears Barnard

Call for Safety Drive

SPEAKING before the Association of American Pesticide Control Officials at its recent Washington, D. C., meeting, C. O. Barnard, executive secretary of the Western Agricultural Chemicals Association, called for a large scale "safety with pesticides" campaign. His plan would involve cooperation of industry, government, land grant colleges and trade associations in promoting safe use of pesticides.

The AAPCO met on October 12 at The Shoreham Hotel for a one day program, part of the week long activities of the Association of Official Agricultural Chemists.

Labeling Directions Ignored

Industry is faced, said Barnard, with problems created by farmers and custom applicators who all too often ignore instructions and recommendations despite accurate labeling that is placed on all pesticides. With aircraft application, problems resulting from mis-use or careless application are only one phase of the difficulty; an equally important difficulty is the disposal of insecticide containers.

The West Coast association head reported seeing airstrips lined with thousands of empty containers, all containing small amounts of pesticide. In one case, the inspectors checked the contents of 10 one-gallon cans and found a full gallon of toxicant remaining, an economic loss of 10 per cent and a distinctly hazardous situation.

In view of the urgency of the situation, Barnard stressed, all groups concerned with the production and use of pesticides should set up committees to explore the feasibility of a complete safety campaign.

Dr. B. E. Conley, secretary of the Committee on Pesticides of the American Medical Association, also

addressed the group reviewing the AMA program for a study of accidental poisonings.

Although physicians at one time paid little attention to the toxicity problem, there is now, said Conley, an improved attitude. The committee is supplying physicians, he reported, with the latest recommendations on treatment of such poisonings.

The retiring president, E. O. Epps, Jr., Louisiana, commented on the meaning of pesticides to the consumer and said that they expect prompt results from pesticide use. It is up to the control officials, he added, to see that the consumer gets what he wants.

Epps questioned the sale of products that do not measure up "to our standards," citing reports from entomologists that indicate the boll weevil is building up a resistance to chlorinated hydrocarbons. Use of the term "active ingredients" was also discussed by Epps, who pointed to materials labeled as containing 100 per cent active materials but which contain a large proportion of a petroleum carrier. Although it is true that the petroleum material possesses toxicity, he stated, active ingredient should refer only to a material which alone will provide good control.

A report on research work on pesticide emulsifiers and other adjuncts was presented by G. L. Brown, Rohm & Haas Company.

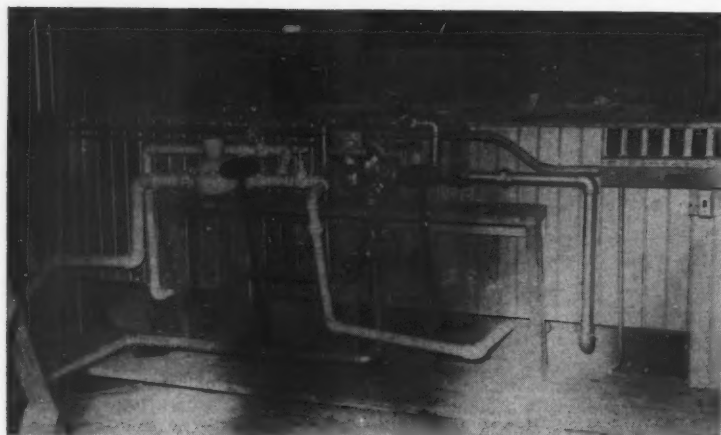
Bower Succeeds Epps

New president of the AAPCO, succeeding Epps, is Clyde A. Bower, Oklahoma. Harry J. Fisher, Connecticut, was named vice president and chairman of the executive committee, and the group re-elected A. B. Heagy, Maryland, secretary-treasurer.

John T. Coyne, USDA, and E. R. Winterle, Florida, were elected to the executive committee succeeding W. G. Reed and Floyd Roberts. ▲



TOP: General view of plant area, aqua ammonia converter in foreground.



LEFT: Complete fertilizer blending unit at Continental plant showing manual controls and charging hoppers.

BOTTOM LEFT: Audience listens as C. A. Guager, local extension director, discusses fertilization problems.



BOTTOM: Front row: Continental Fert. Co.'s Frank Hatcher, D. F. Brownlee, Oliver Haley; J. W. Lofquist of J. C. Carlile. Back row: R. J. Engelhardt, Carlile; Fred Weuve, Jr. and H. T. Fawcett, Continental; J. C. Carlile.



Novel liquid plant features Carlile ammonia convertor, ammonium phosphate reactor unit. Products: 20-0-0, ammonium phosphate, complete mixed goods.

Open House at

Continental Fertilizer Co.

APPROXIMATELY 300 farmers and industry representatives attended the November 24th "Open house" held at the plant of the Continental Fertilizer Company, at Nevada, Iowa. Festivities included free coffee and doughnuts, door prizes and entertainment by local and TV talent.

Occasion for the activity was the coming on-stream of Continental Fertilizer's new neutral solution fertilizer plant at Nevada.

Included in the formal program was an interesting illustrated lecture on liquid fertilizers by Richard ("Dick") Maness of Aylward Fertilizer Company who showed color slides of results obtained with liquid materials under Illinois conditions. A portion of his time was allotted to answering questions from the floor.

Following Maness was C. A. Guager, local extension director, who discussed local fertilization problems and Jess Carlile, J. C. Carlile Corporation, designers and builders of the plant. Carlile provided a complete description of the new facilities.

Guests were conducted on a tour of the new plant, believed to be the first of its kind in the U. S. Two features that aroused special interest were Carlile's patented ammonia convertor and ammonium phosphate reactor circuit.

Anhydrous ammonia, received in tank cars, is unloaded under its own pressure, passing through the convertor where it is combined with water to form aqua ammonia, into storage tanks.

The stored material can be sold as 20-0-0 fer-

tilizer or further processed into ammonium phosphate or complete liquid plant food. At Continental all three routes are followed.

Aqueous ammonia, phosphoric acid and water are continuously blended to form ammonium phosphate in a specially designed continuous reactor circuit where temperature of the reacting materials is precisely controlled and heat of reaction is removed.

This unit produces an 8-24-0 ammonium phosphate solution at the rate of 10 tons or more per hour, sent either to storage or to the complete fertilizer blender.

Two mixing tanks in the blender provide essentially continuous operation. Ammonium phosphate solution is metered, and solid materials are weighed alternately into the blending units. Production rates of 25 tons and up are possible, depending on the desired final analysis. Finished mixed fertilizer is pumped into a storage tank or into transport trucks.

Unique features in this plant include a special scrubber on the ammonium phosphate unit that holds ammonia losses to a negligible point, contrasting sharply with some operations in which ammonia fumes have driven operating personnel from the production area.

Automatic control instruments hold constant the ratio of phosphoric acid to ammonia and water fed to the unit. Only two men per shift are required to operate the facilities. ▲

photo by
Crolius, NPFI



Incoming AAFCO president, M. P. Etheredge, is congratulated by R. W. Ludwick, 1954-55 president.

AAFCO Elects E

LIQUID fertilizer production, fertilizer technology, bulk fertilizers and "perennial problems" were major subjects discussed at the 9th annual convention of the Association of American Fertilizer Control Officials, held in the Shoreham Hotel, Washington, D. C., on October 14.

A new high in attendance, 171 officials and industry representatives, attended as M. P. Etheredge, Mississippi, was named president of the group, succeeding Russell W. Ludwick of New Mexico. J. D. Patterson, Oregon, is the new vice president and South Carolina's Bruce D. Cloaninger was again re-elected secretary-treasurer. F. W. Quackenbush, Indiana, will serve another term on the executive committee and a new committee member, C. P. Marshall of Canada, was elected.

Presidential Address by Ludwick

In his presidential address, Ludwick urged that action be taken on the adoption of a model state fertilizer bill, use of the elemental basis for plant food content, uniform sampling procedures and tonnage reports.

He pointed out that there is a trend in the experiment stations and among extension personnel to recommend fertilizer requirements in terms of the elemental forms of phosphate and potash. Guarantees could be placed on an elemental basis within a short time, he said, adding, "tradition should be eliminated before it interferes with progress."

Ludwick suggested that control workers increase their activity in promoting fertilizer use, pointing out that the experiment stations and extension services do not have the manpower to do the job alone. He observed that contacts with dealers and farmers indicate "much valuable and needed research information is not reaching the level of practical application."

Reviewing the sampling of fertilizers, he cited three specific needs—more samples should be taken, efforts should be made to eliminate some of the congestion that develops during the spring rush and sampling of bulk shipments and custom mixes should be studied.

Liquid Fertilizer Production

What are the basic requirements for a successful liquid fertilizer production operation? R. B. Ellsworth, general manager of R. B. Ellsworth & Associates, noted these four in his address.

1. \$100,000. About \$35,000 for the plant, the remainder for operating capital. If the business is not operated on a current basis with the customer, he added, more would be needed.
2. Low cost formulations. "Our current flow sheets," said Ellsworth, "show 16 basic combinations of raw materials for formulating the finished products."
3. Well-engineered plant. It should be individually designed for the required capacity and production of formulas suitable for the local area and crops. Sufficient raw material and end product storage is needed along with meters and scales accurate to $\frac{1}{4}$ of one per cent.
4. Sales & Distribution. Wholesale distribution, competing directly with dry bulk goods, through custom applicators, is most common. Dealers are given a contract and guaranteed operating area. Some producers make retail deliveries to

FARM CHEMICALS

ts Etheredge

New attendance record set at 9th annual convention

farmers' storage tanks, often supplying the tanks.

An effective operating area, according to Ellsworth, is about 20 to 50 miles radius and the break-even sales point is about 2,000 tons per year. Volume of approximately 5,000 tons is very favorable and for over 10,000 tons the producer should erect another, separately incorporated plant in an adjacent territory.

It is not yet determined, said Ellsworth, that a large (100,000 ton) central plant could operate successfully or that one concern can actively engage in production and sales of both dry and liquid forms and do justice to both.

Kapusta on Technology

Some of the revolutionary changes that have taken place in fertilizer technology during recent years were reviewed by Dr. Edwin C. Kapusta, United States Potash Company. Kapusta reported that it is estimated over 100 plants already have or are installing some form of granulating equipment and that granular mixed goods may total up to 15 per cent of total production of mixture during the coming fertilizer year. Although most production is centered in the Midwest, he said that "notable progress" is being made in other areas.

During 1954-55 about 200,000 tons of fertilizer-pesticide mixtures were used in this country and its territories, said Kapusta, a big increase from tonnages of 90,000 and 150,000 tons in 1952-53 and 1953-54 respectively. Despite the problems involved for the fertilizer manufacturer, there are reports indicating a continued growth in production of such mixtures.

Liquid mixed fertilizers are also gaining rapidly, continued Kapusta, with usage centered in the West and Southwest but gaining rapidly in the Midwest. Such materials can be produced by dissolving correct proportions of plant food carriers in water or,

in a more widely used process, by neutralization of phosphoric acid with ammonia. The latter method involves more complex and costly processing equipment.

Solubility characteristics and salt crystallization, he said, are two limitations placed on the production of some higher grades of liquid mixes. Generally, Kapusta pointed out, the higher the plant food content the higher the temperature at which crystallization begins to take place. The upper limit for plant food content permitting relatively safe crystallization temperatures, is usually 25 to 30 per cent total plant food content, governed by exact mixture content.

Bulk Fertilizer Report

A report on 1953-54 bulk fertilizer distribution was delivered by USDA's Walter Scholl, who told the control workers that 1,829,728 tons of solid fertilizers were shipped in bulk for retail use, 8.25 per cent of total shipments.

Included in this figure were 469,423 tons of mixtures, 1,011,264 tons of primary nutrient materials and 349,041 tons of secondary and trace materials, about 3, 16 and 57 per cent of the totals moved during the period.

J. Fielding Reed, American Potash Institute, urged use of pounds of nutrient per acre rather than pounds of a specific grade in making fertilizer recommendations, pointing out that the soil testing agronomist must consider a number of grades with the same ratio.

Elemental Plant Food Group

The problem of educating the farmer to think of fertilizers in this manner could be solved, he said, by supplying conversion tables that would indicate the quantities of various grades needed to satisfy the nutrient requirements of his crops and soils.

Operation of the National Plant Food Institute was described by Paul T. Truitt, executive vice president of the trade group. Truitt reviewed the merger of two former associations into NPFI and its objectives, which include promotion of industry interests, aiding plant food research and control officials and a widespread public relations program.

An AAFCO committee composed of Secretary Cloaninger, K. D. Jacob, USDA, and J. F. Fudge, Texas, gave a report on a survey in which control officials were polled in the use of elemental plant food guarantees. Although returns were not yet complete, 40 of 49 states and Canada had responded.

Of the 23 that polled members of the control team, four reported all in favor and one showed no preference. In the remaining 18, 41 persons favored use of the elemental form, 27 were opposed and 10 had no preference. ▲

For top efficiency

Check Your Bucket Crane

OPERATORS of overhead traveling bucket cranes usually obtain best performance when peaks are selected on which to lower the bucket. However, with materials so easy to penetrate that they overflow the scoops, it may be better to spot the bucket near the base of the angle of repose to minimize spillage, yet obtain a full load. This is especially true when there is excessive, objectionable dusting or similar situation.

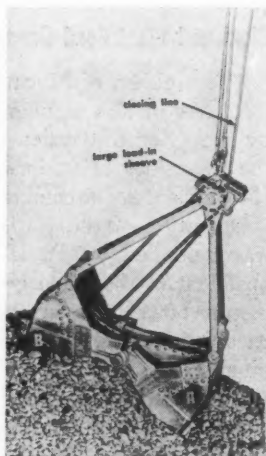
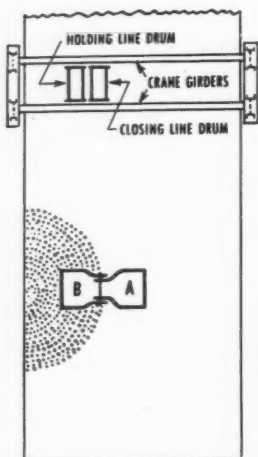
If it is necessary to dig from the side of a pile, the bucket should be spotted if possible on the slope with the "B" scoop on the high side and the hold line drum

toward the top of the pile.

Should it be necessary to operate with the open length parallel with contours of the pile, digging should begin near the top of the pile and continue on the successive ledges down the pile so that the bucket tends to maintain its vertical position with minimum operational guidance.

When the bucket must be cast laterally toward material in a relatively inaccessible position, axes of the trolley drums should be perpendicular to the direction of the cast. Then the cables pendulum directly off the cylindrical faces of the drums. Cables

Axis of Closing Line and Holding Line Drum



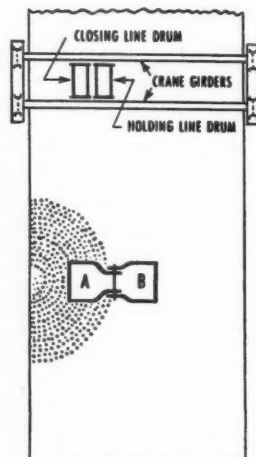
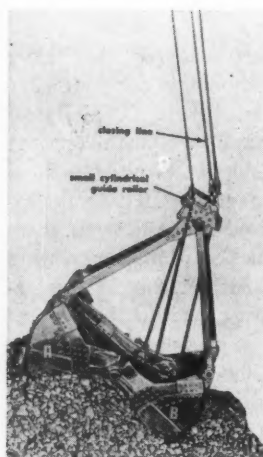
Right:

Holding line drum toward high side of pile.

Style "B" Equalizer.

Scoop "B" high side of pile.

(Closing cable leads in over large diameter head sheave.)



Wrong:

Closing line drum toward high side of pile.

Style "B" Equalizer.

Scoop "B" low side of pile.

(Closing cable leads in over small diameter guide roller.)

Performance

would, of course, tend to jump the grooves when a bucket is cast lengthwise.

The B equalizer arrangement is usually well suited for best performance for two reasons:

1. Fastest travel is usually done by the trolley rather than the crane, in which case the axes of drums are so positioned that pendulum action of the bucket does not cause cables to jump the drum scoring.

2. With hold line drum toward the high side of the pile, pendulum action of the bucket can be utilized

What is the key to maximum cable life and bucket performance? Arnold Hooper of Blaw-Knox says it is co-ordinated relationships of—

- Material Flow
- Direction of bucket opening
- Position of drums in crane trolley

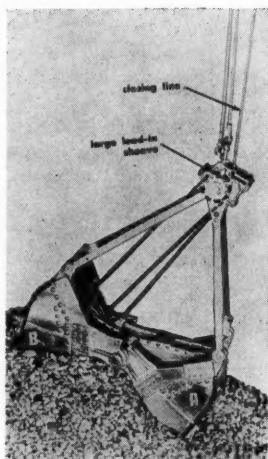
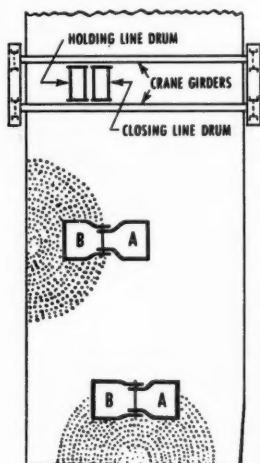
These excerpts from a paper presented by Hooper before the American Institute of Electrical Engineers, illustrate advantages and disadvantages of various operational setups.

to speed up the cycle and assist in spotting the bucket against the slope of the pile.

Since scoop B is then toward the high side, material is dragged downward, assisted by gravity, into scoop A for maximum loads.

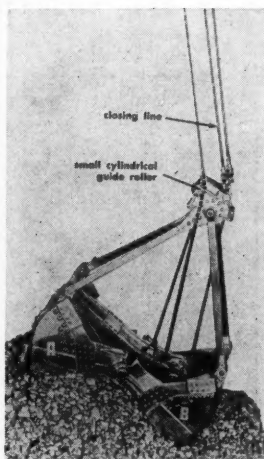
From "Bulk Material Handling with Overhead Traveling Bucket Cranes," a supplement to B-K Maintenance & Care Bulletin No. 2373 R.

Drums at Right Angles to Crane Girders



Right:

Holding line drum toward high side of pile at left.
Style "B" Equalizer.
Scoop "B" high side of pile at left.
Bucket opens parallel contours of the end pile without cable interference with equalizer.
(Closing cable leads in over large diameter head sheave.)

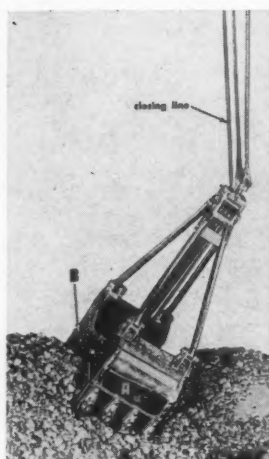
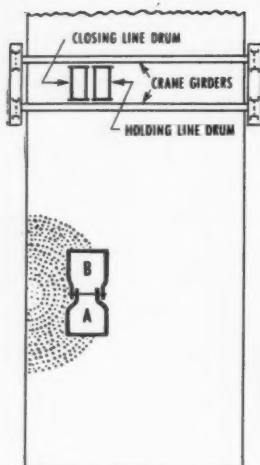


Wrong:

Closing line drum toward high side of pile at left.
Style "B" Equalizer.
Scoop "B" low side of pile at left.
Bucket opens parallel contours of the end pile without cable interference.
(Closing cable leads in over small diameter guide roller.)

CONT. ON NEXT PAGE

Axis of Closing Line and Holding Line

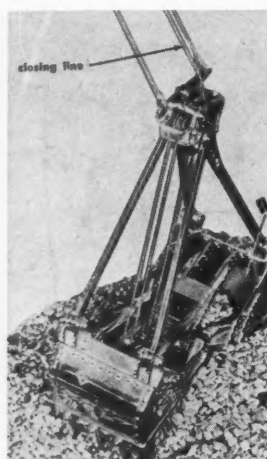


Right:

Closing line drum toward high side of pile.

Style "A" Equalizer.

Bucket opens parallel contours, but closing line does not interfere with equalizer.

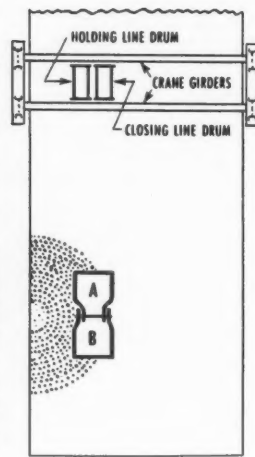


Wrong:

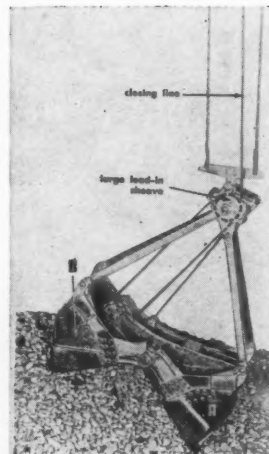
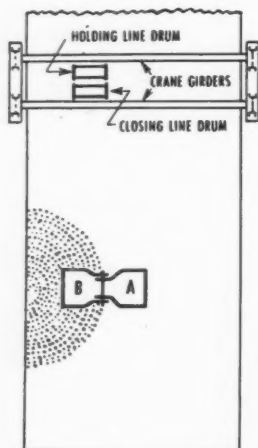
Holding line drum toward high side of pile.

Style "A" Equalizer.

Bucket opens parallel contours, but closing line drags against equalizer.



Axis of Closing Line and Holding Line



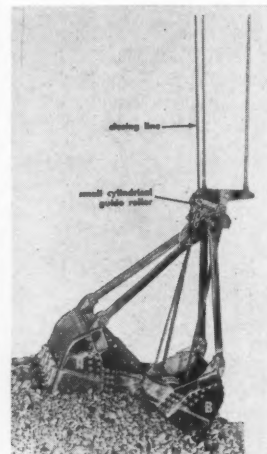
Right:

Holding line drum on far side.

Style "A" Equalizer.

Scoop "B" high side of pile.

(Closing cable leads in over large diameter head sheave.)



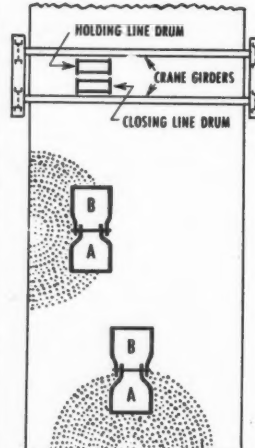
Wrong:

Closing drum on far side.

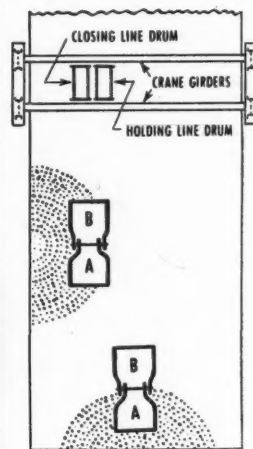
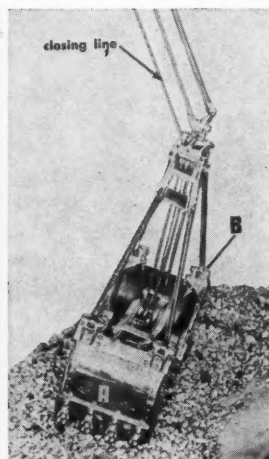
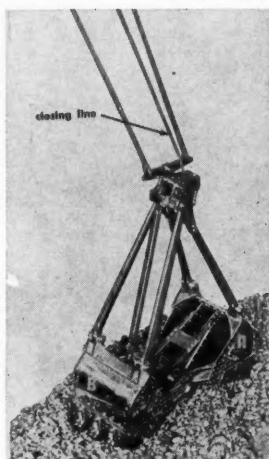
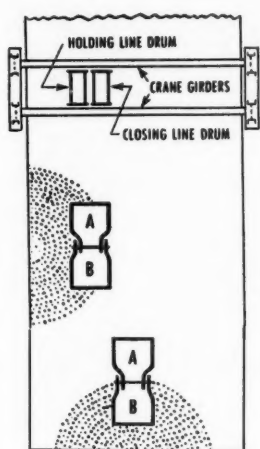
Style "A" Equalizer.

Scoop "A" on high side of pile.

(Closing cable leads in over small diameter guide roller.)



Drums at Right Angles to Crane Girders



Requires Study

Holding line drum toward high side of pile at left.

Style "A" Equalizer—wrong operation for pile at left because closing line drags against equalizer.

Scoop "B" high side of end pile—good operation.

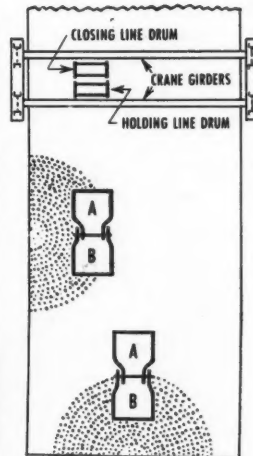
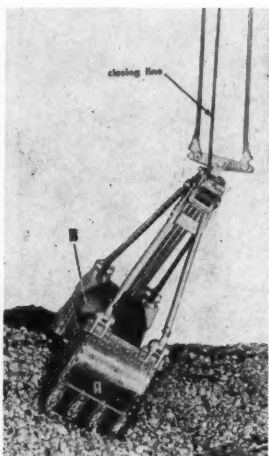
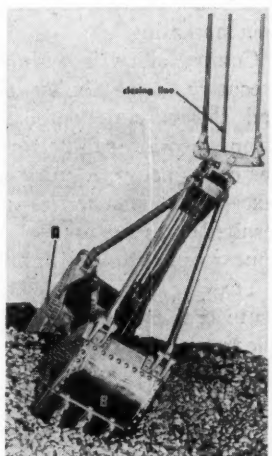
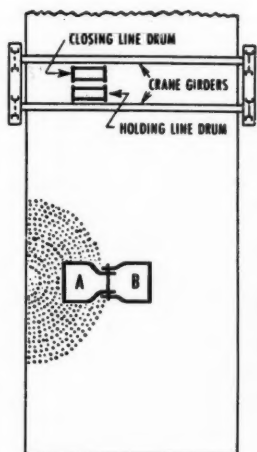
Requires Study

Closing line drum toward high side of pile at left.

Style "A" Equalizer.

Operation okay for pile at left because closing line does not drag against equalizer. On end pile Scoop "A" is on high side, resulting in less satisfactory operation.

Drums Parallel Crane Girders



Right:

Closing line drum on far side.

Style "B" Equalizer.

Bucket opens parallel contours of pile at left.

Scoop "B" high side of end pile.

Wrong:

Holding line drum on far side.

Style "B" Equalizer.

Bucket opens parallel contours of pile at left.

Scoop "A" high side of pile.

Tests show potential of this
polyethylene thiuram sulfide
in wide spectrum fungi control

THIONEB, a potent new fungicide and seed protectant, was introduced at the recent Canadian Agricultural Chemicals Assn. meeting by Charles W. Gates, development manager of the Naugatuck Chemicals Division, Dominion Rubber Company, Ltd.

A member of the thiuram family, it contains as active ingredient, a polyethylene thiuram sulfide. At present, said Gates, it is available for experimental use as a 50 per cent wettable powder under the name Thioneb 50 W.

Trials to date indicate the value of this material in disease control against a wide spectrum of fungi on fruit, vegetable and ornamental crops as well as in application as a seed protectant, he continued. The LD₅₀ rating, based on greenhouse application against early blight on tomatoes, is 22 ppm.

Although specific applications and dosages have

Charles W. Gates, Naugatuck Chem. Div.,
Dominion Rubber Co., Ltd., describes
Thioneb in a talk before the Canadian
Agricultural Chemicals Association.



Thioneb—

A potent new fungicide and seed protectant

not yet been determined, two pounds of the wettable powder per 100 gallons (imperial) have given excellent results indicating that rates as low as one pound are effective for some uses.

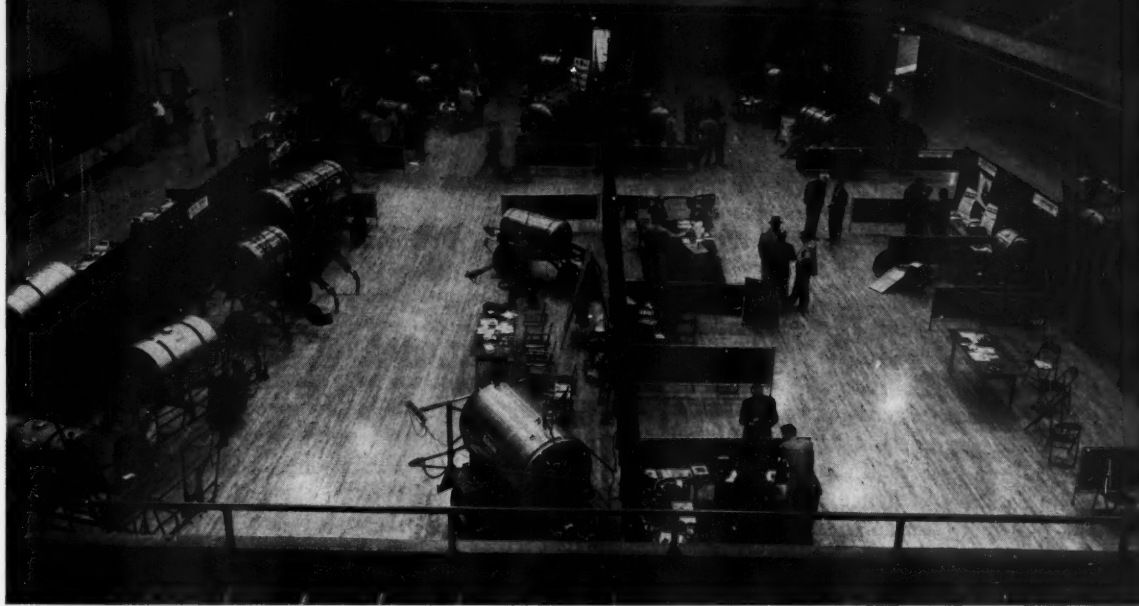
The wettable powder formulation, stated Gates, offers good wettability, suspension and adhesion properties, and residues remaining after spray applications have dried on fruit and leaves are a non-objectionable cream color.

No evidence of phytotoxicity has been reported at the normal application rate of two pounds and at eight times this rate beans and tomatoes sprayed in greenhouse tests showed no evidence of plant injury. Unlike sulfur, Gates pointed out, Thioneb does not induce a leaf-stunting effect, and on apples there is no serious russetting that would impair marketing.

Compatibility is estimated by the Naugatuck executive to be similar to that of zineb, ferbam and thiram and combinations with DDT, malathion, nicotine sulfate, aramite, aldrin, endrin, 10 per cent phenyl mercury acetate and lead arsenate (except on sour cherries where some fruit drop has resulted) can be applied. The material does not appear compatible with lime.

Toxicity investigations have shown that the acute oral toxicity (LD₅₀) for rats is 1.32 grams/kilogram. No evidence of irritation or harmful effect has been found in skin irritation tests on humans, reported Gates, and there have been no unfavorable skin, lung or eye irritation reports during manufacture of the product or from field spray operators.

Residue data, he concluded, are now being determined on a number of fruits and vegetables. Two accurate microanalytical methods have been developed for residue determination and are being perfected for publication. ▲



The equipment display shown at the National Nitrogen Solution Assn. convention in Springfield, Ill., Oct. 13-14.

At the Des Moines N Solutions Meet

COMMERCIAL nitrogen value compared to that obtained from legume crops was emphasized and re-emphasized by speakers at the fall convention and trade show of the National Nitrogen Solutions Assn. on October 13-14 at Springfield, Mo. Well attended sessions covered this subject and a variety of industry problems.

First to point out the lower cost of commercial N was Dr. E. H. Tyner, Illinois agronomist, who added that, with elimination of the nitrogen shortage and through improved soil pest control, a continuous corn culture is now possible. The only major factor yet unsolved is that of a possible surplus of feed grains.

Howard Lathrop, agronomist from Nitrogen Division, also presented the commercial versus legume N comparison, citing figures to show a nitrogen cost of only 15 cents per pound with commercial materials, \$1.25 per pound through legumes.

The advent of Midwestern nitrogen usage, said Lathrop, may be as great an event as the introduction of electricity or the establishment of railroads. Although great strides have been made, a big industry sales job remains, he continued, and top salesmanship is needed to reach the existing potential market.

Third of the guest speakers to cite the N cost comparison was Paul Johnson, editor of *The Prairie Farmer*. He stated that many factors are favorable to continued growth of the nitrogen industry although the market should be carefully approached. The powers of your products should not be exaggerated, he told a banquet gathering; the buyer's confidence can be destroyed if facts are not closely adhered to.

"Within your lifetimes," Johnson predicted, "we will realize the need for the higher yields and surpluses which now pose a problem."

Included on a panel of dealers and distributors which discussed industry problems and individual operations were: Byron Jacobs, moderator, Schelm Bros. Mfg. Co.; Rod L. Maxwell, GLF Soil Service; Don Foster, Ottawa, O. dealer; C. L. Taylor, Michigan Bean Co.; Earl Mangfitt; Wm. Seibel, J. R. Jergem Co.; Don Fletcher, Pacific Supply Coop.; and A. J. Schuler, Welcome Agr. Chem. Co.

Most panelists reported a steady increase in the solutions business and several reported a considerable potential still to be met in their market areas.

Schuler said that his company began dry mix operations seven years ago, adding direct application solutions a year later. Now some 75,000 acres per year are covered in the liquid N program on a do-it-yourself basis. The firm handles some five carloads a day with 95 per cent of its distribution through dealers.

Sales are not on an acreage basis, Schuler emphasized, but are based on tonnage, with a discount for payment within 10 days. In the Northeast, solutions are gaining rapid acceptance, according to Maxwell, who said GLF stresses an educational approach.

Foster reported better profits from custom application than from do-it-yourself sales and said that business has increased steadily during his four years of operation. Although Langfitt now custom-applies, he expects to enter the self service phase at some future date. At present, he reported, there is no farmer-owned equipment in his Missouri-Iowa, market area.

Michigan Bean Co., has been so pleased acceptance of liquid N, that it is considering an expansion program, said C. L. Taylor. Introductory tasks were eased because the firm already had customer contacts

through its soybean activities and through well planned public relations-advertising programs.

For those considering entry into the liquid mixed plant foods business, Wm. R. Bone of Monsanto had several excellent suggestions. First, he said, measure the market and determine the volume of business anticipated, the buyers, and a suitable profit margin.

Make use of a reputable engineering, firm he continued, for assistance in production and marketing. Although, said Bone, this is one of the few businesses in which a dealer can become a manufacturer, the move probably would not pay if a good manufacturer is already in the area. It might be cheaper to buy from him.

Development of the complete liquid plant food market has been rapid, he noted, especially in view of farm price declines and a relatively unchanging fertilizer market. There are definite gains in adding complete mixes too, Bone added, including the possibility of high volume business and the related effects of having available an added customer service.

The final session of the two day program was a luncheon meeting with Geo. H. Iftner, assistant director of agriculture for Illinois, as featured speaker.

General chairman of the affair was Wayne Johnson, association president, assisted by Roy F. Broyhill, The Broyhill Co., chairman for commercial exhibits and Merrill Langfitt, Farm Service Director, KMA (Shenandoah, Iowa), program director.

The group re-elected its officers for a new term, including Johnson; Richard Cecil, vice-president; Geo. Serviss, treasurer; and John White, secretary. Four new directors selected were W. N. Senesac, Don Fletcher, R. L. Wooley and Wm. Parrish. ▲

Registering for the meeting are Messrs. Sparger, Delevan Mfg.; Webber, Spraying Systems; Riffle, Bowser, Inc.; Barger, Broyhill Co.; White, Auburn, Nebr.



CDAA

Controls weed grasses in grass family crops

By R. R. Wangerin

Monsanto Chemical Co.

IN DECEMBER of 1953, it was interesting to note a report by a leading academic weed specialist in the United States in which he said, "So far, there has been no herbicide that will take annual grasses out of corn, and there is not likely to be one soon, since both types of plants belong to the grass family."

At the time this statement was made, Monsanto was preparing to announce the development of certain compounds which have proved quite successful at doing this very job. These compounds have since been tested on more than 2,700 plots in 1954 and in large scale field tests on more than 750 acres of cropland during the 1955 season. In addition, 43 state and seven Canadian experiment stations have conducted evaluations. The results have shown that these herbicides will safely, effectively and economically control annual grasses in a wide variety of agronomic and horticultural crops including grass family crops such as corn and barley.

These compounds belong to two new classes of herbicides: the alpha-chloroacetamides and the dithiocarbamates. Alpha-chloro-N, N-diallylacetamide (CDAA), alpha-chloro-N, N-diethylacetamide (CDEA) and 2-chloroallyl diethyldithiocarbamate (CDEC) are the three that have definitely demonstrated their value as pre-emergence grass specific herbicides and all are quite similar in their action.

Applied at rates of three to four pounds per acre on an overall basis, they control weedy annual grasses such as the foxtail species (including giant foxtail) crab grass, annual blue grass, cheat grass

and wild oats. They also control certain types of broadleaf weeds such as pigweed, carpet weed and purslane.

These three compounds caused no injury at normal application rates when used as a pre-emergence herbicide on field corn, soybeans, flax, sugar beets, cotton, peanuts, seeded alfalfa, red clover, ladino clover, birdsfoot trefoil and a variety of horticultural crops. Even when used at a 12-pounds per acre rate—three times the rate necessary for satisfactory grass control, they caused no visible crop injury or reduction in yield of major agronomic and horticultural crops with the exception of cucurbits.

CDAA the Most Consistent

The CDAA compound has demonstrated an overall superiority among the three I have mentioned because of most consistent performance under a wide variety of conditions.

Most pre-emergence herbicides depend on proper soil moisture conditions for maximum effectiveness. This limitation becomes far less important when using CDAA. It is highly effective even when pre-emergence applications are made on soils low in moisture. This is probably due to the relatively high water solubility of the compound.

On only one plot in 1955, when absolutely no rain occurred for five weeks after treating, did CDAA fail to provide adequate weed control because of lack of moisture. It may be that slight stirring of the soil to mix the chemical in the top inch would have insured a successful treatment.

On the other hand, rainfall following the application of the herbicide does not seriously reduce the effectiveness of its weed control nor is it detrimental to the vigor of the cultivated crop. One might expect a highly water soluble compound such as CDAA to be readily leached. This is not the case with this compound on the heavier soils.

Laboratory data show that the material is ad-

From a talk presented before the Canadian Agricultural Chemicals Assn., October 14, 1955, at Ste-Adele-en-Haut, Quebec, Canada.

sorbed by the organic matter and clay in the soil, but not reversibly. This quick absorption at the surface layer apparently prevents the chemical from leaching too rapidly. It makes CDAA especially effective on clay loam soils, including those which are high in organic matter, in contrast to other existing pre-emergence herbicides.

Its action in the top layer of soil can be likened to the action of water in a sponge. Just as a wet sponge releases enough water to moisten its surroundings, yet preventing immediate release of all water, so does a clay soil surface and organic matter hold the chemical, preventing rapid leaching yet releasing enough required for weed control.

This ability to provide excellent weed control in heavy soils and those high in organic matter is extremely novel and valuable in crops such as corn and soybeans and the grain area of the Western provinces.

Selectivity Within Plant Families

The properties described thus far are unique among pre-emergence chemicals, but do not account entirely for the success of CDAA. Another factor is important, that of selectivity among different species of germinating plants.

This selectivity is a type not displayed by previous commercially available pre-emergence herbicides. Radioactive studies combined with chromatographic techniques show that resistant crop plants such as soybeans and corn do actually absorb CDAA, but metabolize it to natural plant constituents very quickly. Studies of these crop plants show CDAA is completely metabolized within 4-5 days after emergence. The metabolism reaction first forms glyoxylic acid, which converts to glycolic acid. Glyoxylic and glycolic acids are natural constituents of plants, and are used by the plant to build fats, amino acids and proteins, nucleic acids and carbohydrates. Since only the original compound (CDAA) is phytotoxic, the ability of the plant to metabolize it rapidly determines whether or not the plant is susceptible. Fortunately, many of our important crop plants are able to do this while germinating, while most weedy grasses are not.

Most pre-emergence herbicides are known to be toxic to cultivated crops if the chemicals reach the depth of their germinating zone. This has served to give pre-emergence compounds a reputation that is doubtful at best.

CDAA, however, is truly selective for many germinating weedy grasses. When I speak of crops such as corn, flax and barley being resistant to CDAA, this applies to the germination of these crops in very close proximity to the chemical—even in concentrations higher than that necessary for grassy weed control.

It is the inherent selectivity of CDAA which

makes possible, for the first time, a potential control of such deeply germinating grasses as wild oats. We have seen excellent control of this long-time pest in flax and barley without injury. And we are working hard toward the day that we can claim a similar success in wheat.

Test on Canadian Grains

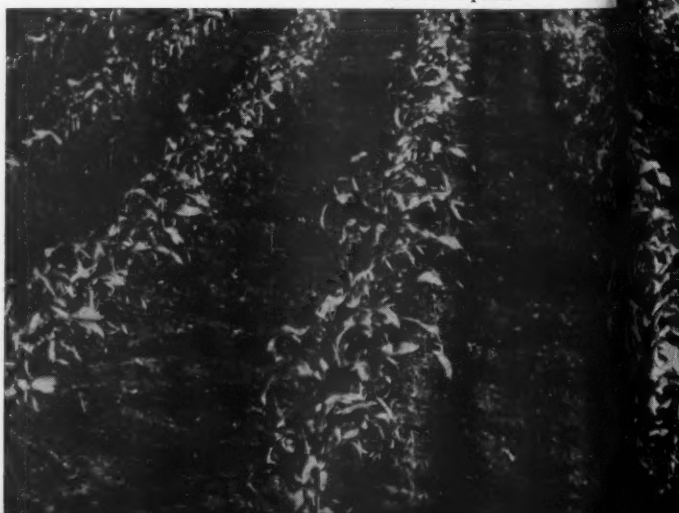
With some 10 million acres of barley and flax and approximately 25 million acres of wheat in the western provinces of Manitoba, Alberta and Saskatchewan, Canadians are sure to be interested in what we are doing experimentally with CDAA and similar compounds in this country.

We have been working closely with Canadian experiment stations during the past year. Considerable preliminary testing has been done, and it appears that pre-planting treatment offers the best control. One such test at a 3-pound per acre rate gave excellent control of wild oats in barley and flax. In this test, the chemical was mixed in the top two inches of soil, and flax and barley were planted 2½ inches deep. No injury to either crop was noted. Three pound per acre pre-planting treatments in wheat, when the wheat was planted the day after treatment, resulted in some reduction in stand of the wheat. Additional tests in wheat are planned to investigate the possibility of reducing the amount of chemical, or increasing the time between treatment and planting. Perhaps fall applications will be successful.

While moisture has proved to be an unimportant factor for control of most annual grassy weeds with CDAA, ample rainfall does improve the control of wild oats. This is because the wild oats germinate at considerable depth. Moisture and time is needed to get the penetration of the chemical to that germinating depth.

The matter of animal toxicity is always uppermost in our minds, and I am happy to report that the acute toxicity of all three compounds is very similar to that of 2,4-D. Using rats as the test animal, the LD₅₀ for CDAA is 700 mg. per kilo;

Monsanto photo



for CDEA, 500 mg. per kilo; and for CDEC, 850 mg. per kilo.

All three compounds have an effect on the skin. The acetamides, in strong concentrations, produce a temporary stinging and sensitivity to cold. This latter effect may be noticed when using cold water to wash the hands.

Fortunately, such incapacity, if encountered, will last only for 4-6 hours. No blisters or rashes or similar disturbances occur. The dithiocarbamate does not produce this cold sensitive effect, but does cause moderate skin irritation in concentrated solutions.

In confined areas, vapors from CDAA formulations will cause watering of the eyes and perhaps make them a bit more sensitive to light. Both effects usually disappear within 10 minutes after removal from exposure. This same effect on the eyes may be encountered from extensive exposure to spray mist in the field.

However, most of our tests in the Middle West were applied by farmers themselves, using their own equipment and no protective clothing. Little or no trouble was encountered. Perhaps the initial stinging sensation, while not serious, serves to warn the user that he may be getting too careless.

In any event, the use of goggles and rubber gloves, and handling the concentrate only with adequate ventilation, will minimize any of these effects. Accidental exposure of the skin to the concentrated chemical should be treated by washing with soap and water. Eyes should be flushed with clean water for 10 minutes or more, and contaminated clothing should be changed promptly and washed.

While all three of these compounds have been quite effective on soils high in clay and/or organic matter, their efficiency is decreased on sandy soil types. The lack of adsorbing material in sandy soils apparently permits rapid leaching of the chemical. It is interesting to note, however, that this leaching produces no injury to the crop plants mentioned earlier, due to a true selective action. Of the three compounds, the dithiocarbamate (CDEC) seems to be best suited to sandy areas.

Here is a portion of the same field which received no chemical treatment or cultivation. CDAA has given consistent superior performance as a pre-emergence herbicide for control of annual grasses and certain broadleaf weeds in field corn, soybeans, flax, sugar beets, cotton, peanuts, seeded alfalfa and other crops.

All three materials are primarily pre-emergence or pre-planting products, acting most effectively on germinating seedlings. Once weeds are more than one to two inches tall, none of these three products will display noticeable herbicidal activity.

Although most of the 1955 tests involved pre-emergence treatments rather than pre-planting applications, results of limited pre-planting treatments have been rather promising. Extensive pre-planting field tests of CDAA on flax, barley and wheat are planned in Canada's western provinces. Fall applications are being made this year, and additional applications are scheduled for the Spring of 1956.

Limited Marketing in 1956

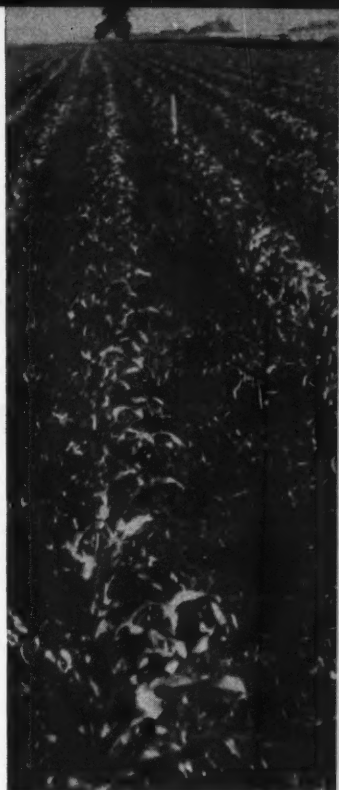
Meanwhile, we hope to test market the CDAA compound in limited quantities under a trademarked name and the Monsanto label next year along with our newly introduced line of established farm chemicals. If all goes well, CDAA will be available on the Canadian market as soon as the experiment stations and Monsanto are certain of its utility and safety on crops under Canadian conditions.

We see the Canadian market as an extremely important one for Monsanto farm chemicals, and especially for CDAA grass-specific herbicide. The possibility of wild oat control in the enormous acreages of Canadian grains—and we must still look upon this only as a possibility—is somewhat intoxicating to contemplate.

Yet we now have hope that this important milestone can be gained, and gained shortly. Intensification of agricultural research by the experimental stations and the chemical industry must and will continue to produce important new chemical farming tools to boost the farmers' output and profit from his broad, flat food factory. ▲

Iowa cornfield treated with 6 lbs. per acre CDAA plus ½ lb. per acre of 2,4-D as an overall treatment. This section of the field was never cultivated from planting until harvest. CDAA is highly effective even when pre-emergence treatments are made on soils low in moisture.

DECEMBER, 1955



1955 Index

to authors and articles appearing in Farm Chemicals January-December, 1955

A

	Month	Page
Acid Coolers at Galena Acid Plant.....	June	63
Adjuvants, New, in 1954.....	Jan.	38
Air Spray Distribution, Factors Affecting.....	Sept.	43
American Chemical Society Cincinnati Meet.....	May	39
American Standards Association National Conference on Standards.....	Jan.	51
"Aminotriazole as a Weed Killer".....	May	58
"Archer Smith's Fertil-Ade Plan".....	May	32
Ark-Mo Plant Food Co., Tour of New Granulated Fertilizer Plant.....	Aug.	32
"AAFCO Elects Etheredge".....	Dec.	38
"AAPCO Hears Barnard Call for Safety Drive".....	Dec.	35
"At the Des Moines N Solution Meet".....	Dec.	45
"Aylward's Sullivan Plant".....	Feb.	47

B

Bedford, J. E.—"Year-End Bonus Plans".....	Nov.	50
"Begin Cal-Spray Fert. Units".....	Sept.	49
Bonus Plans, Year-End.....	Nov.	50
"Brea's Newest Plant".....	Nov.	39

C

California Fertilizer Association Convention.....	Jan.	44
California-Spray Chemical's Fert. Units Begun.....	Sept.	49
"Calspray Opens Research Unit".....	Dec.	62
Canadian Agricultural Chemicals Association Annual Meeting.....	Nov.	46
"CDA Controls Weed Grasses in Grass Family Crops".....	Dec.	47
Cellusan Preservative for Harvesting Containers.....	May	26
"Changes in FDA Tolerance Order".....	April	51
"Check Your Bucket Crane Performance".....	Dec.	40
"CSMA Pesticide Survey".....	July	56
Clark, K. G., and Gaddy, V. L.—"Composition and Nitrification Characteristics of Some Sewage and Industrial Sludges—1952".....	Oct.	41
"Colorado Fuel & Iron Producing DAP".....	March	63
"Commercial Fertilizers—Consumption in the United States, 1953-54".....	June	37
"Composition and Nitrification Characteristics of Some Sewage and Industrial Sludges—1952".....	Oct.	41

Month Page

"Continental Fert. Co., Open House".....	Dec.	36
"Continued Gain Seen in NPK Supplies".....	Nov.	48
"Conveyors Solve Quick Lime Handling Problem".....	Jan.	54
Cook, R. L., and Lawton, K.—"Interaction Between Particle Size and Water Solubility of Phosphorus in Mixed Fertilizers as Factors Affecting Plant Availability".....	April	44
Culpepper, Joe E.—"The Will To Do It".....	Feb.	54

D

"Davison's Prize-Winning Plant Committee Idea".....	Aug.	42
DeVinny, H. B.—"Davison's Prize-Winning Plant Committee Idea".....	Aug.	42
"Double Duty Liquid N".....	March	52
"DuPont Reports on Karmex DL".....	May	37

E

"Effects of Insecticides on Phytotoxicity and Off-Flavor".....	May	47
Emulsifiers, New, in 1954.....	Jan.	38
Entomological Society of America, Houston Meet.....	Feb.	48
"Entomology Research—Past and Future".....	March	45

F

"Factors Affecting Air Spray Distribution".....	Sept.	43
Fertil-Ade Plan, Archer Smith's.....	May	32
Fertilizer Consumption, 1953-54, Preliminary Report.....	Feb.	45
Fertilizer Consumption in the United States, 1953-54.....	June	37
Fertilizer Grades, How to Reduce Excess.....	Aug.	39
Fertilizer-Insecticide Mixtures, A Review		
Part I. Historical.....	Feb.	35
Part II. Problems.....	March	35
Fertilizers, New, in 1954.....	Jan.	38
"Fertilizer on the Turnpike".....	Feb.	58
"Fertilizer-Pesticide Mixtures".....	June	33
Fertilizer-Pesticide Mixtures—NPFI Panel.....	July	41

	Month	Page
Fertilizer Price Index, A New Revision of the.....	Sept.	51
Fertilizer Section, National Safety Council Annual Safety Congress.....	Oct.	32
Fertilizer Supplies, 1955-56 Estimate.....	Nov.	48
"Filtrol 'A' Frame Storage Unit".....	May	63
"First Commercial Urea-Formaldehyde Fert. Compound".....	July	40
"Fresh Look at Molybdenum Usage, A".....	Aug.	45
<i>Fox, Esther I., Scholl, Walter, and Wallace, Hilda M.</i> —"1953-54 Fertilizer Consumption, Preliminary Report".....	Feb.	45
—, "Commercial Fertilizers—Consumption in the United States, 1953-54".....	June	37
Fumigants, New, in 1954.....	Jan.	40
Fungicides, New, in 1954.....	Jan.	40

G

<i>Gaddy, V. L., and Clark, K. G.</i> —"Composition and Nitrification Characteristics of Some Sewage and Industrial Sludges—1952".....	Oct.	41
"Geigy Opens Des Moines Plant".....	April	49
<i>Goll, Milton, and Thompson, Chester D.</i> —"Preservative for Harvesting Containers".....	May	26
Great Plains Agricultural Ammonia Association Field Day Demonstration.....	Sept.	42
NH ₃ Promotion.....	July	51
"Grace Plant Dedicated".....	Feb.	33

H

<i>Harms, John</i> —"Changes in FDA Tolerance Order".....	April	51
—, "Pesticide Tolerances Go Into Effect Soon".....	Feb.	30
—, "Tolerance Rules Issued".....	March	41
"Heckathorn Supplies Western Spray Project".....	Aug.	52
Herbicides, New, in 1954.....	Jan.	41
High Analysis Fertilizers, A New Approach to.....	Sept.	38
"Highest Analysis Farm Goods from MFA Joplin".....	July	68
"How to Reduce Excess Grades".....	Aug.	39

I

Insecticide-Fertilizer Mixtures, A Review		
Part I. Historical.....	Feb.	35
Part II. Problems.....	March	35
Insecticides, New, in 1954.....	Jan.	41
International Minerals & Chemical Corp. Bonnie Plant Expansion.....	March	53
"Interaction Between Particle Size and Water Solubility of Phosphorus in Mixed Fertilizers as Factors Affecting Plant Availability".....	April	44

J

"Join the 1955 Fertilizer Plant Safety Contest".....	May	44
--	-----	----

K

Karmex DL, DuPont Reports on.....	May	37
<i>Knipling, E. F.</i> —"Entomology Research—Past and Future".....	March	45
<i>Kulash, Walter M.</i> —"A Review of Insecticide-Fertilizer Mixtures"		
Part I. Historical.....	Feb.	35
Part II. Problems.....	March	35

DECEMBER, 1955

L

	Month	Page
Lake Charles Harbor and Terminal District Installs Phosphate Silos.....	April	63
<i>Lawton, K., and Cook, R. L.</i> —"Interaction Between Particle Size and Water Solubility of Phosphorus in Mixed Fertilizers as Factors Affecting Plant Availability".....	April	44

M

"Major Trends in the Pesticide Industry".....	Oct.	46
"Maleic Hydrazide".....	Jan.	47
"Merck's New Antibiotic Spray".....	Aug.	41
Meta Systox and Systemics, A Review.....	Feb.	49
"Mexican Government Views Fert. Expansion".....	Jan.	46
Mexican Plant Food Demand Soars.....	Sept.	47
Middle West Soil Improvement Committee Meeting.....	Jan.	37
Annual Joint Meeting.....	April	38
Mississippi River Chem.'s New Plant.....	Nov.	42
Missouri Farmers Assn. New Granular Fert. Plant.....	July	68
Molybdenum Usage, A Fresh Look At.....	Aug.	45
<i>Moyer, Warren</i> —"Major Trends in the Pesticide Industry".....	Oct.	47

N

National Agricultural Chemicals Association		
Spring Meeting (advance).....	March	41
Spring Meeting (followup).....	April	30
Fall Meeting (advance).....	Sept.	36
Fall Meeting (followup).....	Oct.	35
National Nitrogen Solutions Assn., Annual Meeting.....	Dec.	45
National Plant Food Institute		
Preliminary Convention (advance).....	June	31
Preliminary Convention (followup).....	July	30
"New Approach to High Analysis Fertilizers, A".....	Sept.	38
"New Products—1954".....	Jan.	38
"New Products from Bonnie Plant".....	March	53
"New Revision of the Fertilizer Price Index".....	Sept.	50
"Nichols Buys Big Boy Fert. Plant".....	Sept.	41
"1953-54 Fertilizer Consumption, Preliminary Report".....	Feb.	45
1953-54 Fertilizer Consumption in the US.....	June	37
Northeastern Weed Control Conference.....	March	44
Northern Chemical Industries, Plans Complete for Ammonia Plant.....	Feb.	8

O

Off-Flavor and Phytotoxicity, Effects of Insecticides on.....	May	47
"Open Costa Rica Pesticide Unit".....	Aug.	64
"Open House at Continental Fert. Co.".....	Dec.	36
"Open New Tilghman Plant".....	March	33

P

"Pesticide Carryover Improves".....	Feb.	51
Pesticide Certification Rules, USDA.....	Jan.	4
Pesticide-Fertilizer Mixtures.....	June	33
Pesticide-Fertilizer Mixtures—NPFI Panel.....	July	41
Pesticide Industry, Major Trends in the.....	Oct.	47
"Pesticide Industry Report".....	Jan.	26
Pesticide (Liquid) Terms Defined.....	Jan.	53

51

	Month	Page
"Pesticide Safety Drive in Oregon".....	Jan.	29
Pesticide Sales, 1954.....	Jan.	26
"Pesticide Supplies Ample".....	June	52
Pesticide Survey, CSMA.....	July	56
Pesticide Tolerance Extension Granted.....	Aug.	50
Pesticide Tolerance Rules Issued.....	March	41
"Pesticide Tolerances Go Into Effect Soon".....	Feb.	30
Pesticide Tolerance Order—Changes in FDA.....	April	51
<i>Peter, George</i> {—"Spray Pilot Shortage: A Report".....	Nov.	40
—"Tolerance Extension Granted".....	Aug.	50
"Phosphate Silos for Lake Charles Port".....	April	63
Phosphorus in Mixed Fertilizers—Interaction Between Particle Size and Water Solubility of, as Factors Affecting Plant Availability.....	April	44
Phytotoxicity and Off-Flavor, Effects of Insecticides on.....	May	47
"Plans Complete for NCI Ammonia Plant".....	Feb.	8
Plant Committee Idea, Davison's Prize-Winning.....	Aug.	42
"Plant Food Barge Service".....	Nov.	64
"Plant Food Demand Soars in Mexico".....	Sept.	47
<i>Polzer, G. F.</i> —"Sins of a Salesman".....	March	49
"Potash Deliveries at New High".....	June	55
"Potash Imports Hit".....	March	40
"Preservative for Harvesting Containers".....	May	26
<i>Price, W. F.</i> —"The Manufacturer and Seasonal Application".....	Feb.	60

Q

Quimicas Agrícolas Centro-Americanas, Ltda. Pesticide Unit Opened.....	Aug.	64
--	------	----

R

"Review of Insecticide-Fertilizer Mixtures, A"		
Part I. Historical.....	Feb.	35
Part II. Problems.....	March	35
Review of Systemics and Meta Systox.....	Feb.	49

S

Safety		
"Fertilizer Safety Program".....	Oct.	32
"Join the 1955 Fertilizer Plant Safety Contest".....	May	45
"Pesticide Safety Drive in Oregon".....	Jan.	29
Safety Congress Meeting.....	Dec.	66
"Safety Incentive Program".....	Jan.	54
"Small Plant Safety Programs Do Pay Off".....	May	42
Sales, Pesticide, 1954.....	Jan.	26
"Savannah Unit for Southern Nitrogen".....	Oct.	64
<i>Scholl, Waller Wallace, Hilda M.; and Fox, Esther</i> —"1953-54 Fertilizer Consumption" Preliminary Report.....	Feb.	45
—, "Commercial Fertilizers—Consumption in the United States 1953-54".....	June	37
<i>Scott, R. C.</i> —"A Review of Systemics and Meta Systox".....	Feb.	49
Seasonal Application, The Manufacturer and.....	Feb.	60
Sewage and Industrial Sludges—1952, Composition and Nitrification Characteristics of Some.....	Oct.	41
Seymour Process for High Analysis Fertilizers.....	Sept.	38
"Sins of a Salesman".....	March	49
"Small Plant Safety Programs Do Pay Off".....	May	42
Southern Feed and Fertilizer Control Officials Annual Convention.....	Aug.	39

Month Page

Southern Nitrogen Co. Plans Savannah Unit.....	Oct.	64
Spencer Plant Foods Inc.'s New Plant.....	Feb.	71
"Spray Pilot Shortage: A Report".....	Nov.	40
<i>Stanley, Willard F.</i> —"What Rapid Tax Depreciation Means To You".....	Jan.	31
"Stauffer's Vapam Fumigant".....	July	52
"Steamboat Brand Nitrogen".....	Nov.	42
Streptomycin Spray, Merck's New.....	Aug.	41
Systemics and Meta Systox, A Review.....	Feb.	49

T

<i>Tale, H. Douglas</i> —"Maleic Hydrazide".....	Jan.	47
Tax Depreciation, Rapid.....	Jan.	31
"TVA To Make Diammonium Phosphate".....	May	4
"Thioneb—A Potent New Fungicide and Seed Protectant".....	Dec.	44
Tilghman Plant, Open New.....	March	33
<i>Thompson, Chester D., and Goll, Milton</i> —"Preservative for Harvesting Containers".....	May	26
"The Manufacturer and Seasonal Application".....	Feb.	60
"The Will To Do It".....	Feb.	54
"Tolerance Extension Granted".....	Aug.	50
"Tolerance Rules Issued".....	March	41
"Tour of Ark-Mo's New Plant, A".....	Aug.	32
Track Maintenance.....	Sept.	64
"Try an Employee Tractor Contest".....	May	30
"Tuscola Plant (USI) Dedicated".....	March	28

U

"Unique Coolers at Galena Acid Plant".....	June	63
U. S. Industrial Chemicals Co.'s Tuscola Plant Dedicated.....	March	29

V

Vapam Fumigant, Stauffer's.....	July	53
"V-C 13 Nemacide Marketed".....	July	45

W

<i>Wallace, Hilda M. Scholl, Waller and Fox, Esther, I.</i> —"1953-54 Fertilizer Consumption" Preliminary Report.....	Feb.	45
—, "Commercial Fertilizers—Consumption in the United States, 1953-54".....	June	37
<i>R. R. Wangerin</i> —"CDAA... Controls Weed Grasses in Grass Family Crops".....	Dec.	47
"Watch Your Track".....	Sept.	64
"What Rapid Tax Depreciation Means to You".....	Jan.	31
"Why Farmers Buy Fertilizer".....	July	48

Y

"Year-End Bonus Plans".....	Nov.	50
-----------------------------	------	----

Z

<i>Zubryn, Emil</i> —"Mexican Government Views Fert. Expansion".....	Jan.	46
—, "Plant Food Demand Soars in Mexico".....	Sept.	47

**PIONEER
PYROPHYLLITE PRODUCERS**

—NOW OFFERS—

"PHYLLITE"

(TRADE NAME)

World's greatest diluent and carrier is non-abrasive, uniform and adheres readily to foliage. It is ground in a Raymond mill—95% through 325 mesh and has a low pH of 5.1. Phyllite is packed in 50 lb. valve bags, 20-ton lots, lowest prices on the west coast, f.o.b. plant.

"STONE MEAL"

(TRADE NAME)

16% organic potash with trace minerals. Immediately available in bulk or sacks. Write us for helpful information and generous sample. New Campo, Calif. plant has increased production to 300 tons per day.

"REDLITE AGGREGATE"

(TRADE NAME)

for aerating soil and amendment, contains 15% iron and 19 other natural trace elements.

MAIN OFFICE
111 NORTH LA CIENEGA BLVD.
BEVERLY HILLS, CALIF.
PHONE: OLYMPIA 2-2859
LOS ANGELES PHONE: OLEANDER 5-7417

**FEEDING AND FERTILIZER
MATERIALS**

(SINCE 1898)

SAMUEL D. KEIM

1343 ARCH STREET
PHILADELPHIA 7, PA.

Ashcraft-Wilkinson Co.

*Fertilizer
Materials*



*Feeding
Materials*

ALL FERTILIZER MATERIALS

FOREIGN AND DOMESTIC

Agricultural Chemicals

Nitrogen Compounds

Organic Ammoniates

Sulphur

Potash

**Exclusive Distributors: DUVAL SULPHUR AND POTASH COMPANY
ESCAMBIA BAY CHEMICAL CORPORATION**

Vegetable Oil Meals and Feedstuffs

HOME OFFICE: ATLANTA, GA.

BRANCHES:
NORFOLK, VA.
CHARLESTON, S. C.
JACKSON, MISS.

CABLE ADDRESS:
ASHCRAFT

BRANCHES:
TAMPA, FLA.
COLUMBUS, OHIO

Equipment & Supplies

RS-454 Ful-Pac Valve Packer Line

A new line of valve packing machines is being introduced by Fulton Bag & Cotton Mills. The FUL-PAC line will consist initially of three basic models—the Economy, single spout packer; the Special, a deluxe single spout unit; and the Dual, a twin spout packer.

All models utilize the screw-type principle for movement and delivery of material to be packed



R. J. Gigler of Fulton explains outstanding features of the company's new FUL-PAC Valve Bag Packer. Model being demonstrated is the "Dual."

and are completely encased in easily removable steel jackets. Other features include increased packing speed and greater bag size flexibility.

For complete details circle 454 on the Service Card.

RS-455 Mobile Lab Glassware Washer

Labline offers a new mobile laboratory glassware washer with four power brushes and capable of cleaning all types of glassware. Motor driven, interchangeable nylon brushes have rigid spindles for safety and decreased breakage.

The vertical spiral brushes are always submerged during cleaning and special winding of bristles continually forces fresh cleaner into glassware. A selection of nine brushes cover all types of equipment and are equipped with tapered chucks which can be

changed quickly without draining the sink.

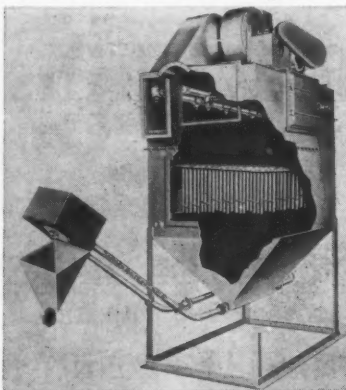
A portable unit designed to be placed directly in any sink is also available.

For a folder circle 455 on Service Card.

RS-456 Johnson-March A Scrubber

Efficiencies of up to 99 per cent in removing solids, fumes and odors from exhaust gases have been obtained in tests with the new Johnson-March Type A Hydro Precipitator Scrubber. Dusts are compressed by hydro-compression of exhaust gases through a system of multiple tubes into a water chamber, producing a highly efficient scrubbing action.

Self-cleaning characteristics and elimination of moving parts lower operating and maintenance costs, and a recirculating system cuts down water consumption.



The scrubber is available in 15 sizes with capacities ranging from 500 to 40,000 cfm and consists of a rectangular housing with a plenum chamber and multiple-tube section; a water tank is mounted underneath and a de-watering filter and an exhaust fan on top. Sludge can be removed continuously or intermittently by manual, hydraulic or mechanical means.

For information circle 456 on Service Card.

RS-457 Save Bags With Tape Repairs

One southern pesticide producer is saving 50 per cent on repair of torn multi-wall bags by using pressure-sensitive tape from Behr-Manning. Recommended for multi-wall repairs is a paper tape with high strength and adhesion such as No. 131 Behr-cat Flatback available in 60 yard rolls, two and three inch widths.

For a lasting job the correct procedure suggested by the manufacturer is to brush away dust, apply a tape patch directly over the tear, clean the whole area with a damp cloth, wait about 30 seconds and apply a final piece of tape, or several pieces in a cross-hatch pattern on a large tear.

For more details circle 457 on Service Card.

RS-458 Flexi-Liners For Storage Tanks

Wayne Jones of Flexi-Liner reports that the firm's liner unit has been successfully used in storage tanks for liquid fertilizers including salt mixtures, 40 per cent nitrogen and 75 per cent phosphoric acid.

Flexi-Liners, according to Jones, are liquid-tight, flexible cylindrical plastic sacks designed to protect the wall of a storage tank from corrosive action of its contents and to prevent contamination of the liquid material. They are constructed of plastic sheeting formulated according to tank contents.

The units are easily hung by inexperienced workers and are attached to walls and ends of metal tanks by a stave and sleeve arrangement. Economy is a big feature; the liners can be used with steel tanks and cost about \$600 for a 10,000 gallon tank, around \$900 for a 20,000 gallon unit.

For a folder with information and specifications, circle 458 on Service Card.

FARM CHEMICALS

**POTASH
SUPERPHOSPHATE
UREA, 45½% & 46% N.
DI-N-CAL—20.5% N.
(Calcium Ammonium
Nitrate)
BAGS—
Paper and Burlap**

ALEX. M. McIVER & SON

Brokers

Fertilizer Materials
Industrial Chemicals

P. O. BOX 155 Ph. 3-4828-29
CHARLESTON, S. C.

"Since 1915 your most efficient channel for sales
and purchases of Fertilizer Materials"

**CHI-ORGANIC
(Chicago Activated Sludge)
HYNITE TANKAGE
CASTOR POMACE
GROUND
COTTON-BUR ASH
(38-40% K₂O Potash)**

SHUEY & COMPANY, Inc.

Specialty: Analysis of Fertilizer Materials and Phosphate Rock.
Official Chemists for Florida Hard Rock Phosphate Export As-
sociation. Official Weigher and Sampler for the National Cotton-
seed Products Association at Savannah; also Official Chemists
for National Cottonseed Products Association.

115 E. BAYSTREET, SAVANNAH, GA.

Dictionary of Plant Foods 1955 Edition \$1.00 postpaid

The reference booklet or all who are interested in
production and use of chemical fertilizers.

Farm Chemicals, 317 N. Broad St., Phila. 7, Pa.

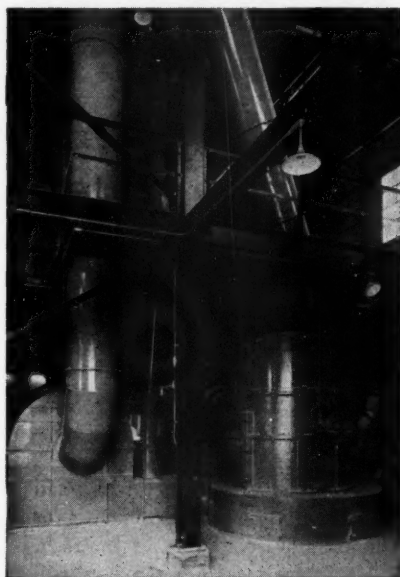
MONARCH SPRAYS



This is our Fig. 645 Nozzle. Used
for Scrubbing Acid Phosphate Gases.
Made for "full" or "hollow" cone in
brass and "Everdur." We also make
"Non-Clog" Nozzles in Brass and
Steel, and
Stoneware Chamber Sprays
now used by nearly all chamber
spray sulphuric acid plants.

CATALOG 6-C

MONARCH MFG. WORKS, INC.
2501 East Ontario Street, Philadelphia, Pa.



when *fine* grind is desired

BRADLEY PNEUMATIC HERCULES MILL

The **ONLY** pneumatic roller mill
installed at floor level.

Designed and constructed for FINE grinding of limestone,
phosphate rocks, and many other similar materials . . .
Bradley Pneumatic Hercules Mill produces a uniform grind
from 20 to 325 mesh. Floor level installation provides
easy accessibility . . . lowest installation and maintenance
cost. Durable, non-clogging vibratory feeder for depend-
able, worry-free operation. Material with excessive moisture
can be dried within the mill system.

For complete information, write for Catalog No. 62



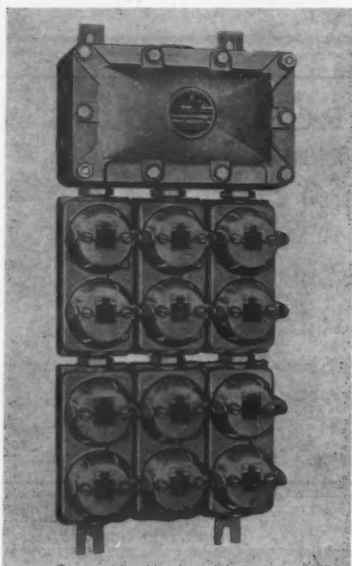
Bradley PULVERIZER CO.

LONDON ALLENTOWN, PENNA. BOSTON

RS-459 Condulet EWP Panelboards

Type EWP panelboards, available from Crouse-Hinds, are designed for both hazardous locations and for use in installations where corrosive vapors, non-combustible dusts or moisture are present.

The Condulet assemblies function either as load centers or



panelboards, providing circuit protection on wiring systems up to 120 volts. Two sizes of terminal block housings handle up to 12 or 24 single-pole circuit breakers.

For more information circle 459 on Service Card.

Roto-Kard Rotary Mobile Record Unit

A new Roto-Kard record-keeping unit has been developed by Remington Rand and is designed to speed reference and lighten the work load in cost, credit, inventory, maintenance and other operations.

Completely mobile, it has a capacity of 6,000 8x5 cards for a reference record or 4,500 cards for a posting record in one compact electrically or manually operated drum.

Suppliers' Briefs

Arkell & Smiths. Lev Hiscox has been appointed sales service manager of the Flexible Packaging div. with headquarters in New York. He was previously associated with Union Bag & Paper Corp. in a similar capacity.

New sales representative in Florida, working out of Jacksonville, is Samuel O. Wilkes.

Barnard & Leas Mfg. Co. has named W. R. Stephens manager of a new department handling design and manufacture of agricultural and general chemical processing plants. Stephens is currently directing development of package plants for production of neutral solution fertilizers.

Chase Bag Co. Three appointments have been announced: B. G. Deazley to manager of the Reidsville, N. C. plant; A. Chad Ogden as sales manager of the Kansas City branch; and G. E. Snoke to manager of the Goshen, Ind. plant.

Clark Equipt. Co., Construction Machinery Div., Pipestone plant new address: P. O. Box 599, Benton Harbor, Mich. Phone: WALnut 5-8881.

J. Wm. Kelly has been named sales manager of the Electric Truck section of Clark's Industrial Truck div.

Crippen & Erlich Labs has issued a new bulletin on analyses of farm chemicals. Write to C&E at 1138 E. North Ave., Baltimore, 2, Md. Ask for Bulletin No. 3.

Dorr-Oliver has announced two promotions—Carlton W. Crumb to the new post of director of technical data and Charles M. Comstock to advertising manager. They were previously sales pro-

motion manager and assistant sales promotion manager, respectively.

Fulton Bag & Cotton Mills and Rit Dyes have combined to sell housewives on the versatility of burlap bags in home sewing. Fulton now applies an adhesive paper band to burlap, (removable by soaking in water) to carry all brand printing, and Rit experiments showed that burlap could be easily dyed at home. Each Fulton paper banded bag carries pattern suggestions for making articles from the dyed burlap.

Promotion includes direct mail folders to manufacturers and retailers, a variety of merchandising aids and consumer advertising in a leading farm magazine.

Effective November 30th, Louis C. Slater resigned his position as manager of the Textile Bag Div.

Link Belt Co. Through an exchange of shares, Syntrol co., Homer City, Pa., has become an L-B subsidiary. Work is already progressing on introduction of several new products, and Syntrol is adding new manufacturing space.

Napco Industries, Inc. has named Roy E. Mullin general sales manager, a newly created position made necessary by recent expansion in the construction and automotive fields.

St. Regis Paper Co. New resident manager of the Jacksonville, Fla. mill is Stephen P. Kaptain, former director of wood research and development for southern woodlands. John A. McDermott, former manager, will devote full time to his duties as supervisor of all St. Regis paper mills.

Torit Mfg. Co. Frank K. Donnelly has been appointed sales representative in the Washington-Oregon area.

FARM CHEMICALS

FERTILIZER MATERIALS MARKET

New York

November 12, 1955

Sulfate of Ammonia. Stocks have accumulated at a number of domestic shipping points and producers were looking to the export market to relieve the situation. However, most producers are ready to meet competition should the prices decline.

Ammonium Nitrate. Most producers have ample stocks to take care of any expected demand that may arise during the Winter and Spring months and no price changes were noted.

Urea. A better supply picture was noted for urea since there are several new producers in production. Price remains at about \$105 per ton, delivered buyers' plants at Eastern points. Very little imported urea was being brought in.

Nitrogenous Tankage. Along with several other organics, demand was poor for this material at prices ranging from \$4 to \$5.10 (\$4.86 to \$6.20 per unit N), f.o.b. shipping points. Most buyers were holding off until the last minute, hoping for lower prices.

Castor Pomace. Demand continued to exceed the available supply of castor pomace and a shortage is looked for during the present fertilizer season. Production is down and the price continues on the basis of last sales of \$40 per ton, f.o.b. domestic production points.

Organics. Organic materials were rather plentiful for prompt shipment at the present time and most prices showed an easy tendency. Tankage sold at \$4.75 per unit of ammonia (\$5.77 per unit N), f.o.b. Eastern shipping points and blood was offered at \$5.50 per unit (\$6.68 per unit N), f.o.b. Pennsylvania points. Cottonseed meal last sold at \$55 per ton, f.o.b. Southern points and soy-

bean meal, 44 per cent protein, in bulk, sold at \$50 per ton, f.o.b. Decatur, Ill.

Fish Meal. This material showed considerable strength and advancing tendencies because of the present short supply. Feed buyers showed interest but little buying was done by fertilizer manufacturers. Last sales on basis of \$154 per ton, f.o.b. Eastern shipping points.

Superphosphate. Since the end of the various strikes at the phosphate rock mines, production was increased and supplies are said to be plentiful of both regular and triple grades. Shipments at some points are behind last year's figures.

Potash. This market continued to be a routine affair with shipments being made by domestic producers against existing contracts.

Bone Meal. This material maintained a firm price tone with buying being done by both fertilizer and feed buyers at prices of \$65 to \$67 per ton, f.o.b. shipping points.

Hoof Meal. This material remained steady in price at \$6.25 per unit of ammonia (\$7.59 per unit N), f.o.b. Chicago. The market was rather dull.

Philadelphia

November 16, 1955

The raw materials market remains more quiet than is usual for this time of the year. With the exception of fish scrap, there seems to be an ample supply of everything. In fact, in some cases inventories are beginning to build up uncomfortably.

Sulfate of Ammonia. Demand is reported to be very spotty, and while stocks of synthetic grade are not excessive, coke-oven grade is piling up with production ahead of current de-

mand. Manufacturers of coke-oven are said to be exceedingly disappointed over the fact that the recent purchase of nitrogen for Korea included only about 5,000 metric tons of their grade out of a total of about 130,000 metric tons of nitrogen materials involved.

Nitrate of Ammonia. Supplies are plentiful but the demand is rather slack. Production is down as compared with the same period last year.

Nitrate of Soda. Stocks are ample to meet any likely demand, and prices remain unchanged.

Blood, Tankage, Bone. Blood and tankage are weaker and buying is limited. Blood is priced at \$5.25 to \$5.50 per unit ammonia, (\$6.38 to \$6.68 per unit N), and tankage at \$4.75 to \$5.00, (\$5.77 to \$6.08 per unit N), depending on location. Steamed bone is in fair supply at \$65.00 per ton.

Castor Pomace. This is in very limited supply and more or less nominal at \$40.00 per ton.

Fish Scrap. This continues scarce and priced too high to attract much attention. Menhaden meal is quoted at \$155 and scrap at \$150 per ton.

Phosphate Rock. The strike in Florida has been settled and operations resumed. Producers seem presently to be absorbing their recently increased operating costs, but it is felt that prices will advance.

Superphosphate. Both normal and triple grades are in sufficient supply to meet present requirements, with normal the more plentiful. Prices remain unchanged.

Potash. Stocks are ample but the demand is below what is usually met at this season. No price changes are noted and producers look for activity to develop soon.



PEST REPORTS

Pink Bollworm Survey Results

IT IS encouraging to report that through October 31, 1955, with one exception, no pink bollworms had been found outside the regulated areas during the fall survey. The one exception was the finding of a pink bollworm moth in a light trap at New Roads, Pointe Coupee Parish, La. This trap was located at the Southern Cotton Oil Co. mill. The mill has been placed under a dealer carrier permit which stipulates that no seed on hand would be diverted; that products shipped from the mill be free from contamination with cottonseed and that milling be completed and the premises thoroughly cleaned by a comparatively early date. By the close of October pink bollworms had been found in only five of the 28 regulated counties of Arkansas and only seven parishes of the 18 within the regulated area of Louisiana.

Increases were found in Cad-do, DeSoto, Sabina, Calcasieu and Cameron parishes, La., and in Hempstead county, Arkansas. Beginning with the western tier of parishes in Louisiana and extending west to central Texas, north into the eastern half of Oklahoma as far north as inspections had been completed, nearly all counties showed some increase in the degree of infestations as compared to 1954.

During the period of October 16-31, 1955, in the older quarantined counties of southwestern Oklahoma pink bollworms were found on lint cleaners at the rate of 14.0 per inspection as compared to 4.6 for the same period

in 1954. The average for the combined inspections in the west Texas counties of Crosby, Lubbock, Hockley, Cochran, Bailey, Lamb, Hale and Floyd were 0.86 pink bollworms per inspection as compared to 0.60 for the same period last year.

Green boll inspections in central-east and northeast Texas showed nearly 100 per cent of the fields infested with the buildup in the few remaining late bolls heavy.

Gin trash inspections have been completed with negative results in Alabama, Georgia, Florida and South Carolina.

Alfalfa Aphid Name Changed

Since the discovery of the aphid outbreak on alfalfa in New Mexico in early 1954, the species involved in New Mexico and other States has usually been referred to as the Yellow Clover Aphid (*Myzocallis trifolii*). The taxonomy of the species on alfalfa has been undergoing detailed study and it is definite that there are characteristics which separate it from the yellow clover aphid of the eastern United States.

Although further work is necessary by taxonomists before a generally acceptable scientific name is adapted, it has been agreed that the species on alfalfa which has spread so rapidly since early 1954 will be called by the common name of spotted alfalfa aphid. The aphid continues to spread and by early November had been taken in the central and eastern Arkansas counties of Lonoke, St. Francis and Chicot.

Presented in cooperation with the Economic Insect Survey Section, Plant Pest Control Branch, Agricultural Research Service, USDA.

The insect has now been reported widespread in southwestern Missouri as far east as Moniteau county and as far north as Howard county. In Nebraska reports have been received from as far north as Blaine and Thomas counties which are in the central part of the state. Box Elder county, Utah, which is along the Utah-Idaho border has also become infested as has Shasta county, Calif., which is only one county away from the Oregon border. Population increases of spotted alfalfa aphid within the past month have been reported from California, Arizona, Nevada, Kansas, Arkansas and Texas. Although some of the populations are still below economic levels damage has been recorded this fall in Riverside county, Calif., and new plantings endangered in Clark county, Nev. In Greenlee county, Ariz., young alfalfa seedlings were being injured. In Murray county, Okla., some new stands were reported killed which in the previous week carried only a light population. The population in most areas has seemed to increase with the cooler fall weather and in Arizona it was pointed out that succulent growth following irrigation was also a factor.

Greenbug Survey

In a small grain survey conducted in 23 northwest Texas counties during October greenbugs were found in the following counties: Crosby, Floyd, Hale, Swisher, Castro, Deaf Smith and Hansford. Highest populations, up to five per linear foot of row, were found in volunteer wheat fields in Deaf Smith and Hansford counties. Infestations were spotted and very low in most seeded fields. ▲

FARM CHEMICALS

Chemicals

FDA Issues Partial Deadline Extension

FDA has extended the deadlines by which pesticides must comply with all requirements of the Miller bill until January 22 and March 1, 1956. The extension was granted because FDA has not yet been able to process petitions now on file for tolerance establishment or exemptions and to permit obtaining of more data on post-harvest residues.

The agency stated that the new dates apply only where a tolerance or exemption was not previously established or approved.

Exempted until January for certain uses are: Aldrin, allethrin, calcium cyanide, chlordane, dieldrin, endrin, EPA, ethylene dibromide, Ferbam, hydrocyanic acid, lindane, methoxychlor, methyl bromide, parathion, phygon, piperonyl butoxide, pyrethrins,

toxaphene, Zineb and Ziram.

Exempted until March 1 for some uses are: Acrylonitrile, BHC, butoxypropylene glycol, carbon bisulfide, carbon tetrachloride, chlordane, chloropicrin, copper carbonate (basic), DDT, ethylene dibromide, ethylene dichloride, sodium orthophenylphenate tetrahydrate and trichloroethane.

FDA Tolerances

"Karmex Herbicides (including Karmex W (3-(p-chlorophenyl)-1, 1-dimethylurea; and Karmex DW and DL (3-(3,4-dichlorophenyl)-1,1-dimethylurea). Tolerance of one ppm on sugar cane, pineapple and cottonseed. Also established for Karmex W active ingredient on asparagus, spinach and dry bulb onions.

Malathion. 8 ppm on alfalfa, apples, apricots, avocados, snap beans, beets (including tops), blue berries, broccoli, brussels sprouts, cabbage, cauliflower, cherries, clover, cranberries, cucumbers, dates,

eggplants, grapes, kale, lettuce, mangoes, melons, mustard greens, onions (including green onions), passion fruit, peaches, peas, pears, peppers, pineapples, plums, potatoes, prunes, rutabagas, spinach, squash (summer and winter), strawberries, tomatoes and turnips (including tops).

Maneb (manganese ethylene bisdithiocarbamate). 7 ppm total metallic dithiocarbamate on apples, beans, carrots, celery, cranberries, cucumbers, eggplant, figs, grapes, melons, onions, peaches, peppers, spinach, summer squash, tomatoes and winter squash. 0.1 ppm on almonds and potatoes.

Sulphenone. 8 ppm on apples, peaches and pears in an amendment to the previous approval. Sulphenone is now also included on the list of previously approved tolerances for chlorinated hydrocarbons.

Systox. 0.75 ppm on apples, broccoli, brussels sprouts, cabbage, cauliflower, muskmelons, oranges, pears, potatoes, strawberries and walnuts.

You'll get more SUNSHINE!
IN **St. Petersburg** IN **Phoenix**



The Soreno HOTEL



Jokake Inn

FLORIDA ARIZONA

ALSONETT HOTELS

IN Fort Lauderdale



The POINSETTIA BEACH HOTEL

Mold your vacation to your pleasures at an Alsonett Hotel, famous for courteous service and fine facilities. **JOKAKE INN**, in the "Valley of the Sun," 10 miles east of Phoenix. Typically Southwestern in activities, climate and manners. All resort activities; private pool. Hand picked guests. **THE SORENO**, St. Petersburg, Florida, on beautiful Tampa Bay. Good location, good food, good entertainment. Delightful guest rooms. **POINSETTIA BEACH HOTEL**, Ft. Lauderdale, Florida, "Around the corner from everything." Fine appointments.

SPRAYING SYSTEMS
BoomJet
SPRAY NOZZLES




up to .
66 feet
WIDE
with one
compact
assembly

for the broadcast spraying of
grains, grasses and liquid fertilizers

Easily mounted on rear of tractor. Use where spray boom accuracy is not needed. Sprays to both sides in field spraying or one side only in fence row or road side spraying. A Spraying Systems Co. original design. Made in all brass for general farm spraying and in all aluminum for spraying liquid fertilizers. For complete information write for Bulletin 66.

GunJet
SPRAY GUNS



All capacities. Write for Bulletins 65 and 69

For TeeJet SPRAY NOZZLES . . . write for Bulletin 58

SPRAYING SYSTEMS CO. 3280 Randolph Street
Bellwood • Illinois

by Dr. Melvin Nord

PATENT REVIEWS

Production of Insecticidal Calcium Arsenate

In US 2,715,562, issued Aug. 16, 1955 to John Les Veaux and assigned to Food Machinery & Chemical Corp., a method and apparatus are described for producing an insecticidal basic calcium arsenate of exceptionally high bulk, superior adhesiveness to plant surfaces, and greater stability.

The method is shown in Fig. 2. Reservoir (4) is charged with 4000 lbs. of quick lime which fills it to the starting liquid level (1). The agitator (1) is started and

the pump (6) is also started, thus pumping and recirculating the hydrated lime slurry from the reservoir and through the reaction chamber (14) at the rate of about 500 gallons per minute.

Arsenic acid of specific gravity of 1.85 (containing 60 per cent As_2O_3) contained in the measuring tank (9) is run through the rotameter (11) by opening valve (16) sufficiently to allow the arsenic acid to flow through the meter at a rate of about 0.4 gallon per minute.

The addition of the arsenic acid is continued at substantially this constant rate with continuous recirculation of the slurry until a dried representative sample of the resultant suspension in the reservoir shows a pH of not less than about 7.5 and not more than about 12 when determined by means of the glass electrode pH meter in an intimate mixture of 20 grams of the dried sample and 40 grams of water after being held at a temperature of about 22° C. for one hour, with continuous stirring, and then discontinuing the process.

Before taking the representative sample of the suspension in the reservoir for the purpose of the pH determination just described it is advisable to shut off the flow of acid from the acid tank until the pH determination is completed. Usually two or three such determinations will be required just before the end of the process before the correct pH value is obtained. If it should happen that the pH value first obtained is outside the range specified, relatively small addi-

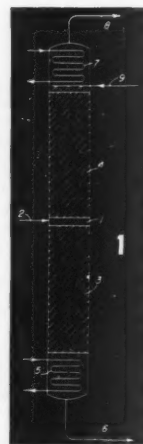
tions of arsenic acid or lime may be made to the slurry in the reservoir in order to adjust the pH value within the specified range or to any preferred value within that range.

After the pH value of the suspension has been reached the suspension is dried, pulverized and is then ready for use, either alone or in mixture with other common insecticidal dust or spray ingredients.

In US 2,715,599, issued Aug. 16, 1955 to John Les Veaux and Calvin M. Tidwell, and assigned to FMC, further improvements in the process are described.

Urea Synthesis

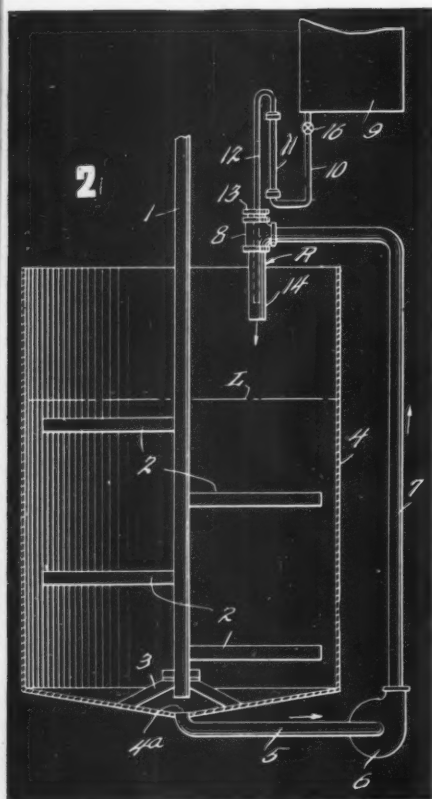
US 2,716,629, issued Aug. 30, 1955 to Shinjiro Kodama et al describes a method of recovering unreacted ammonia from the effluent liquor obtained from a urea synthesis by reaction of carbon dioxide and ammonia.



In fractional distillation of this liquor, ammonium carbamate forms on the distillation column, and subsequently decomposes. If it rises to the cold top zone of the column, it may cause a blockage of the column. In order to prevent

this, additional water or aqua ammonia is added at the top of the column.

As shown in Fig. 1., feed enters the packed column (at 2), and water or aqua ammonia enters (at 9). This insures that all the ammonium carbamate formed is carried down to the bottom of the column, where it breaks down to ammonia, carbon dioxide and water. ▲



Literature

Engineering Standards, Multiple V-Belt Drives, revised 1955. Multiple V-Belt Drive & Mechanical Power Transmission Assn., 27 E. Monroe St., Chicago 3, Ill., and The Rubber Manufacturers Assn., 444 Madison Ave., New York City 22. 24 pages. \$1.00.

Basic changes in this revised manual include 10 pages of new horsepower ratings for standard and premium quality belting and ratings for belt speeds from 200 to 6,000 fpm. Also included are basic horsepower formulas used, manufacturing tolerances for groove sheave profiles and matching limits for sets of belts.

Principles of Farm Machinery, Roy Bainer, R. A. Kepner and E. L. Barger. John Wiley & Sons, Inc., 440 4th Ave., New York City 16. 571 pages. \$8.75.

This new volume, a part of the Ferguson Foundation Agricultural Engineering Series, stresses functional requirements and principles of operation for basic types of farm machinery. Among the individual chapters of special interest to the farm chemicals industry are application of fertilizers and spraying and dusting.

Location Factors in the Petrochemical Industry, PB 111-640. 105 pages. Office of Technical Services, US Dept. of Commerce, Washington 25, D. C. \$3.00.

Factors affecting the future geographic distribution of the petrochemicals industry are examined and a location analysis for each of the various petrochemicals is presented. The future pattern of petrochemicals expansion, according to the author's, is likely to be somewhat less oriented to the natural gas producing areas than is current production.

DECEMBER, 1955

Statistics

Pesticide Exports To Top \$80 Million

BDSA statisticians predict that pesticide exports may top the \$80 million figure this year, if current trends continue. During the first half 167,110,000 pounds of pesticides were shipped, 18 per cent over the 1954 figure of 142,084,000 pounds, and 34 per cent higher in value.

The increases in value for specific materials include: BHC, 87 per cent; calcium arsenate, 60 per cent; DDT (25 per cent and over on 100 per cent basis), 58 per cent; lead arsenate, 45 per cent; miscellaneous farm insecticides and related materials (including new organic pesticides not listed separately), 37 per cent; household and industrial insecticides, 19 per cent; and weed killers, 8 per cent.

Sulfur formulations containing 20 per cent or more active material dropped 81 per cent.

Compared to the first half of 1954, here is how shipments are broken down according to continent and destination:

North America—still the largest market, up 29 per cent. Exports to Costa Rica tripled, to Mexico, doubled.

South America—about the same although the volume to Argentina tripled and exports to Uruguay were 13 times higher. Shipments to the Caribbean area were up 12 per cent despite a 26 per cent drop in exports to Cuba.

Europe—up 41 per cent even though domestic output increased. Shipments tripled to France, gained 10 times to Spain.

Asia & Oceania—up nearly 40 per cent. Shipments to India were up two and a half times,

tripled to Iran and Saudi Arabia and doubled to the Philippines.

Africa—up 80 per cent. More than doubled to the Belgian Congo and Union of South Africa but dropped 50 per cent to Iran and a third to Taiwan.

Aug. Super Output Drops 10% from 1954

Production of 136,722 tons of superphosphate (100 per cent APA) during August reflected settlement of the Florida phosphate strike showing an increase of 46 per cent over July although 10 per cent down from August, 1954.

Shipments totaled 89,683 tons, up 39 per cent over the previous month and about the same as August, 1954. Stocks on hand at the end of the month were about the same as those held on August 1st and two per cent less than August 31, 1954.

Kentucky Fertilizer Report for 1954-55

Kentucky's fertilizer distribution report for 1954-55 shows that a total of 428,387 tons of plant foods were sold including 352,645 tons of mixed goods and 75,742 tons of straight materials.

The leading mixed grades included (in order of use): 5-10-5, 4-12-8, 3-12-12, 6-8-6, 2-12-6, 5-10-10 and 3-9-6. Top straight materials were superphosphate, ammonium nitrate, muriate of potash and calcium metaphosphate.

W. Va. Shows First Half Fert. Use Gain

J. B. McLaughlin, West Virginia's commissioner of agriculture, reports fertilizer sales at 68,186 tons during the first half of 1955, a gain of 13 per cent. Most of the increase, he states, was in sales of mixed goods and normal superphosphate.

Canadian Pesticide Sales Gain in 1954

In Canada, the value of 1954 pesticide sales is estimated at \$19,456,601 by the Dominion Bureau of Statistics, an increase of 13 per cent over 1953. Live-stock treatments, at \$2,759,866, showed the biggest gain (73.9 per cent); followed by agricultural sprays and dusts, \$7,395,123 (up 16.9 per cent); household and industrial insecticides, \$4,234,147 (up 11.6 per cent); and rodenticides, \$346,915 (up 10.4 per cent).

2,4-D and MCP formulations for selective weed control in crops gained nearly 8 per cent in dollar value and almost 9 per cent in actual volume.

Preliminary '54 Data on Potash, Borates

A preliminary report of the 1954 census of mineral industries as issued by the Bureau of the Census shows the value of shipments of potash, soda and borates at \$108 million. Production of potash salts represented a six-

fold increase since 1939 (year of the previous census) while natural sodium and borate compounds output tripled.

Shipments in 1954 were valued at \$65 million for muriate of potash, \$6 million for sulfate of potash and \$15 million for boron compounds.

The sulfur industry shipped 5.5 million long tons in 1954, valued at \$141 million, three times the 1939 volume.

Potash Deliveries Continue to Rise

A report by the American Potash Institute shows North American deliveries of potash salts at 2,709,714 tons (1,601,249 tons K_2O) during the first nine months of 1955, up 7 per cent in salts and K_2O . Potash for agricultural use gained 2 per cent during the period.

Institute members delivered 653,662 tons potash (387,819 tons K_2O) in the third quarter of 1955, up 5 per cent and 6 per cent respectively over 1954. Agricultural deliveries showed a drop of 7 and 6 per cent respectively.

1954 Phosphate Rock Production Up 11%

Mine production of phosphate rock ore totaled over 45.5 million tons in 1954, according to the Bureau of Mines, with total marketable production up 11 per cent over 1954. Increases were registered in all three producing areas, 12 per cent in Florida, 8 per cent in Tennessee and 6 per cent in the Western states.

Phosphate rock sold or used in the US was up 4 per cent with increases of 6 and 5 per cent respectively in Florida and Tennessee, a drop of 7 per cent in the West. Apparent consumption was nearly 11 million long tons, up 3 per cent.

Stocks on hand at the end of the year totaled 3,391,000 long tons, a gain of 30 per cent. Imports increased 21 per cent, originating primarily in Curacao. Exports were 11 per cent higher than in 1953.

The Bureau of Mines reported that estimated world production gained 12 per cent in 1954 with most of the increase occurring in the United States, North Africa and USSR.

Production — August, 1955

Compiled from Government Sources

Chemical	Unit	August		July
		1955	1954	1955
Ammonia, synth. anhydrous.....	s. tons	237,202	222,430	236,759
Ammonia liquor, coal & coke (NH_3 content) (Including diamphosphate & ammonthiolyanate)	pounds	3,911,378	2,402,100	3,824,205
Ammonium nitrate, fert. grade (100% NH_4NO_3).....	s. tons	121,978	140,743	123,817
Ammonium sulfate				
synthetic (technical).....	s. tons	82,453	96,206	*79,948
coke oven by-product.....	pounds	161,097,514	128,399,700	157,876,678
BHC (Hexachlorocyclohexane).....	pounds	7,838,836	3,430,204	6,531,148
Gamma content.....	pounds	1,302,785	572,944	1,070,486
Copper sulfate (gross).....	s. tons	7,076		5,560
DDT.....	pounds	11,276,953	6,609,712	11,334,015
2,4-D Acid.....	pounds	1,800,337	1,253,152	*2,795,522
esters and salts.....	pounds	**2,264,229	974,504	*1,659,438
esters and salts (acid equiv.).....	pounds	**1,618,815	734,055	
Phosphoric acid (50% H_3PO_4).....	s. tons	244,502	232,995	197,401
Sulfur, Native (Frasch).....	l. tons	500,710	462,098	487,633
Recovered.....	l. tons	34,900	30,700	33,900
Sulfuric acid, gross (100% H_2SO_4).....	s. tons	1,202,169	1,096,573	1,121,908
Chamber Process (100% H_2SO_4).....	s. tons	147,436	180,269	127,236
Contact Process (100% H_2SO_4).....	s. tons	1,054,733	916,304	994,672
Superphosphate (100% APA).....	s. tons	136,722	*93,769	151,945
Normal (100% APA).....	s. tons	97,741	*62,510	104,121
Enriched (100% APA).....	s. tons	3,425	2,795	3,607
Concentrated (100% APA).....	s. tons	35,223	28,335	43,825
Wet Base (100% APA).....	s. tons	333	129	392
2,4,5-T Acid.....	pounds	86,789		130,515

* Revised. **Partly estimated.

CAL-MAG OXIDES

CUT YOUR COSTS WITH →

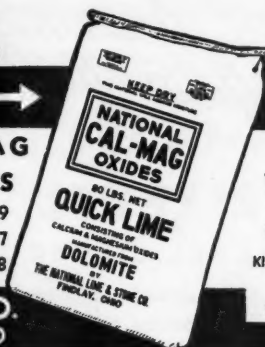
Unexcelled for its superior Dehydrating, Neutralizing, and Curing factors in the preparation of better fertilizers. Write for complete information.

PROMPT SHIPMENTS

Three railroads serve our Carey, Ohio plant--assuring prompt delivery--everywhere.

CAL-MAG OXIDES

MgO 40.39
CaO 58.07
TNP 203.88



We Also Produce
DOLOMITIC
HYDRATED
LIME (165 TNP)
and
KILN DRIED RAW
DOLOMITE
(107 TNP)
Screened to size

The **NATIONAL LIME and STONE CO.**
General Offices FINDLAY, OHIO

ORGANIC FERTILIZER MATERIALS

CASTOR POMACE
BONEMEAL
HOOFMEAL

NITROGENOUS TANKAGE
SHEEP MANURE
VEGETABLE MEALS

Send us your inquiries

FRANK R. JACKLE

405 LEXINGTON AVENUE

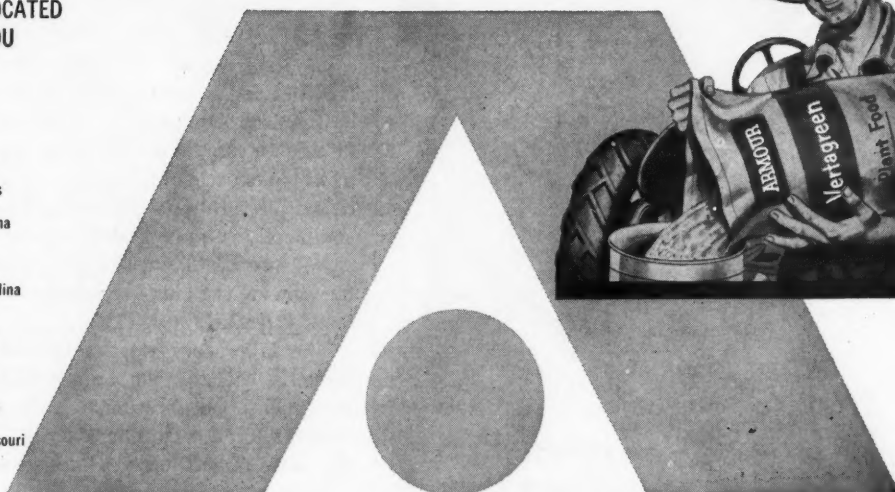
NEW YORK 17, N. Y.

Farmers depend on ARMOUR FERTILIZERS

31 FACTORIES
CONVENIENTLY LOCATED
TO SERVE YOU

Albany, Georgia
Atlanta, Georgia
Augusta, Georgia
Baltimore, Maryland
Bartow, Florida
Birmingham, Alabama
Carteret, New Jersey
Chicago Heights, Illinois
Cincinnati, Ohio
Columbia, South Carolina
Columbus, Georgia
Dallas, Texas
East St. Louis, Illinois
Greensboro, North Carolina
Houston, Texas
Jacksonville, Florida
Jeffersonville, Indiana
Memphis, Tennessee
Montgomery, Alabama
Nashville, Tennessee
New Orleans, Louisiana
Norfolk, Virginia
North Kansas City, Missouri
Presque Isle, Maine
Sandusky, Ohio
Siglo, Tennessee
Waterloo, Iowa
Wilmington, North Carolina
Winona, Minnesota

Also sales offices in Havana,
Cuba, and San Juan, Puerto Rico



ARMOUR FERTILIZER WORKS

General Office, P. O. Box 1685, Atlanta 1, Georgia



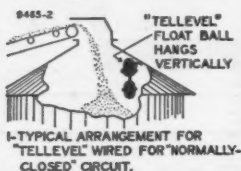
*Fill Bins Accurately...
and Automatically...*

with an

S-A

TELLEVEL

BIN LEVEL CONTROL



- Avoids spillage
- Saves time and storage space

The S-A Tellevel automatically stops or starts feeding conveyors or elevators as the material level rises or falls... enabling you to accurately fill bins, tanks or hoppers to capacity without wasteful overflow. Available in normal, heavy-duty and explosion-proof models.

PRICED **\$40.00** F.O.B. AURORA
LOW AS

IN STOCK FOR IMMEDIATE DELIVERY

STANDARD PRODUCTS DIVISION

STEPHENS-ADAMSON

MFG. CO.

75 Ridgeway Ave.

Aurora, Illinois



Dr. W. D. Thomas, lead research pathologist, and Paul Eastburg, assistant entomologist, inspect plants used for testing new insecticides and fungicides in Calspray's greenhouse, part of the recently completed laboratories of the Bioscreening section in Richmond.

Calspray Opens Research Unit

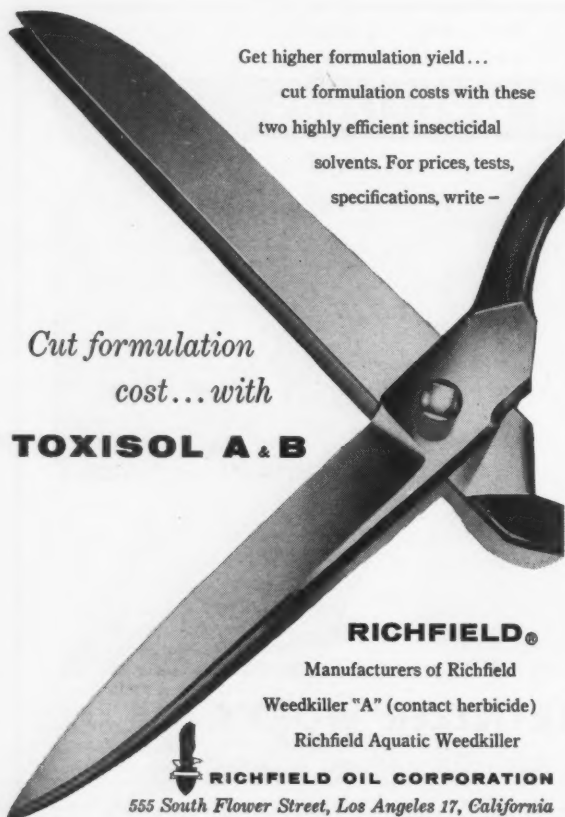
OPEN house was held on September 23 in the new laboratories of the Bio-screening Section of California Spray Chemical Corporation's Research and Development Department at Richmond, Cal. Guests were welcomed by Leo R. Gardner, manager of the department.

The new lab, part of the Calspray program for expanded research facilities, incorporates modern facilities and several Calspray-developed innovations in research equipment. Visitors saw rooms with filtered air sources and carefully controlled conditions in which experimental insect and animal colonies are raised for future use in testing new materials in the completely equipped laboratories.

Next to the lab, a new greenhouse provides space for growing the plants necessary in the testing of new insecticides and fungicides.

The laboratory was remodeled from a building formerly used by the California Research and Development Corporation which worked there on projects for the Atomic Energy Commission before the entire operation was moved to Livermore, Cal.

This expansion marked the start of the multi-million dollar plant expansion for Calspray, a program that includes a 16-million dollar fertilizer plant and added quarters for administrative and office personnel. The entire program is scheduled for completion by late 1956. ▲



Get higher formulation yield...
cut formulation costs with these
two highly efficient insecticidal
solvents. For prices, tests,
specifications, write -

*Cut formulation
cost...with*

TOXISOL A & B

RICHFIELD®

Manufacturers of Richfield

Weedkiller "A" (contact herbicide)

Richfield Aquatic Weedkiller



RICHFIELD OIL CORPORATION

555 South Flower Street, Los Angeles 17, California

FROM THE WORLD'S STOCKPILES—TO YOUR PLANT...



Woodward & Dickerson

serves you

with an 80 year reputation for reliability in quality, price and delivery.

POTASH

NITROGEN

MURIATE
SULPHATE
NITRATE

SULPHATE OF AMMONIA
AMMONIUM NITRATE
CALCIUM AMMONIUM NITRATE
UREA

AND ALL OTHER FERTILIZER AND FEED MATERIALS

ESTABLISHED 1873
Woodward & Dickerson
Inc.

1400 SOUTH PENN SQUARE, PHILADELPHIA 2, PA., U.S.A.

TELEPHONE: LOcust 4-5600

Cable Address: "Woodward"

TELETYPE: PH109

Branches in MADRID, MANILA, TOKYO, SEOUL, WASHINGTON, D.C., U.S.A.

Alphabetical List of Advertisers

Alsonett Hotels, Chicago, Ill.	59	Keim, Samuel D., Philadelphia, Pa.	53
American Agricultural Chemical Co., New York City	28	Kraft Bag Corporation, New York City	—
American Potash & Chemical Corp., Los Angeles, Calif.	27	Krause Plow Corp., Hutchinson, Kansas	—
Armour Fertilizer Works, Atlanta, Ga.	63	Lebanon Chem. Corp., Lebanon, Pa.	—
Ashcraft-Wilkinson Co., Atlanta, Ga.	53	Link-Belt Co., Chicago, Ill.	17
Berkshire Chemicals, Inc., New York City	25	Lion Oil Company, El Dorado, Ark.	13
Bradley & Baker, New York City	8	Ludlow-Saylor Wire Cloth Co., St. Louis, Mo.	—
Bradley Pulverizer Co., Allentown, Pa.	55	McGraw-Hill Book Co., New York City	—
Broadway Rubber Corp., Louisville, Ky.	—	Alex M. McIver & Son, Charleston, S. C.	55
Burlap Council, New York City	—	Mississippi River Chem. Corp., St. Louis, Mo.	—
Butler Manufacturing Co., Kansas City, Mo.	23	Munson Mill Machinery Co., Utica, N. Y.	—
Carlile, J. C. Corp., Denver, Colo.	—	Monarch Mfg. Works, Inc., Philadelphia, Pa.	55
Chase Bag Co., Chicago, Ill.	—	New York Hanseatic Corp., New York City	7
Chemical Construction Corp., New York City	5	Nitroform Agricultural Chemicals, Woonsocket, R. I.	19
Clark Equip. Co., Benton Harbor, Mich.	—	National Lime & Stone Co., Findlay, O.	63
Clover Chemical Co., Pittsburgh, Pa.	—	Nitrogen Division, Allied Chemical & Dye Corp., New York City	Back Cover
E. D. Coddington Mfg. Co., Milwaukee Wisc.	—	Pennsylvania Salt Mfg. Co. of Wash., Tacoma, Wash.	—
Cole, R. D. Mfg. Co., Newman, Ga.	—	Phillips Chemical Co., Bartlesville, Okla.	—
Commercial Solvents Corporation, New York City	—	Pioneer Pyrophyllite Products, Beverly Hills, Calif.	53
Crowley Tar Products Co., New York City	—	Potash Co. of America, Washington, D. C.	Third Cover
Davison Chemical Co., division of W. R. Grace & Co., Baltimore, Md.	—	Poulsen Co., Los Angeles, Calif.	—
Diamond Alkali Co., Newark, N. J.	—	Richfield Oil Corp., Los Angeles, Cal.	64
Duval Sulphur & Potash Co., Houston, Tex.	—	Sauerman Bros., Inc., Bellwood, Ill.	—
Doane Agricultural Service Inc., St. Louis, Mo.	—	Schmutz Mfg. Co., Louisville, Ky.	32
Escambia Bay Chemical Corp., Pensacola, Fla.	Second Cover	Shell Chemical Corporation, Denver, Colo.	—
Grand River Chem. Div., Deere & Co., Tulsa, Okla.	—	Shuey & Company, Inc., Savannah, Ga.	55
Hammond Bag & Paper Co., Inc. Wellsburg, W. Va.	—	Smith-Rowland Co., Norfolk, Va.	—
Highway Equipment Co., Cedar Rapids, Ia.	—	Sohio Chemical Co., Lima, O.	—
Hough, The Frank G. Co., Libertyville, Ill.	—	Southwest Potash Corporation, New York City	—
Indian Jute Mills Association, New York City	—	Spraying Systems Co., Bellwood, Ill.	59
International Paper Co., Bagpak Div., New York City	—	Stedman Foundry and Machine Co., Inc., Aurora, Ind.	25
International Minerals & Chemicals Corp., Chicago, Ill.	—	Sturtevant Mill Co., Boston, Mass.	31
Spec. Prod., Phosphate Chemicals Div.	3	Stephens-Adamson Mfg. Co., Aurora, Ill.	64
Phosphate Minerals Div.	11	Tennessee Corporation, Atlanta, Ga.	25
Potash Div.	—	Texas Gulf Sulphur Co., New York City	—
Jackle, Frank R., New York City	63	The Thomas Alabama Kaolin Co., Baltimore, Md.	—
Jaeger Machine Co., Columbus, O.	—	Union Bag & Paper Corp., New York City	—
KBH Corporation, Clarksdale, Miss.	—	U. S. Industrial Chemicals, New York City	—
		U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.	15
		United States Potash Co., New York City	21
		Williams Patent Crusher & Pulverizer Co., St. Louis, Mo.	1
		Woodward & Dickerson, Inc., Philadelphia, Pa.	65

editorial

Safety Meeting

THIS month, we'll report on a very few of the fine talks presented at the recent Fertilizer Section, National Safety Council meetings during the Chicago Safety Congress. There was, as usual, an excellent variety of subjects covered, but we feel that these will be of special interest to many of you.

Mechanical safeguards can play an effective part in plant safety although ineffective ones are often worse than none at all because of the false sense of security created in the operators mind.

This topic was discussed in a demonstration talk by Anaconda Copper Mining's Duncan MacDonald, who presented these general specifications for an effective guard: it must protect from a pre-existing hazard; must not present any new hazards; must permit normal maintenance operations without removal and be removable, or nearly so, for major maintenances.

In addition, said MacDonald, such units cannot obstruct control of the machine and should not weaken its construction. With but one exception, flywheel guards, units should be built so that in case of a break, fragments are contained within the guard itself.

MAX W. FORESMAN, Spencer Chemical Co., pointed out, however, that most industrial accidents result from unsafe acts and that the worker's safety attitude is all important, regardless of the use or absence of guards and other devices.

If your plant safety record is bad, mere safety talk and posters won't correct the situation—you must know why the record is bad and why your employees seem accident susceptible.

Reasons frequently cited, said the Spencer public and plant relations director, include laziness or a dislike for a job, supervisor or co-workers. In solving such a problem, there must be two-way communication with contact between supervisor and his men of primary importance. Unless communication is effective on this level, stated Foresman, other media will be useless.

This doesn't mean, he stressed, merely talking about safety; it requires action—safe practices on all (management and plant) levels.

A principal goal in this communications system is to make the worker feel that he belongs in his group, accomplished through various means including the use of bulletins and internal house organs. Communication with the employee's family may prove fruitful, stimulating their safety con-

sciousness and, of equal importance, making them aware of the company's interest in reducing plant accidents.

Such an approach, concluded Foresman, will aid in eliminating the sometimes obscure reasons for excessive in-plant accidents, thus permitting effective safety communications.

GENERAL practices and precautions relating to the production of fertilizer-pesticide mixtures were reviewed by Robert P. Henry of Willson Products, Inc., who pointed out that the first step in assuring safe operation of such facilities is a general review of basic plant routine and safety.

Once this is completed, Henry suggested these specifics as those of primary importance in safe operation of fertilizer-pesticide facilities:

Atmospheric hazards require proper ventilation, possibly by natural air flow, although mechanical dust collector systems might well be the only satisfactory method.

Special clothing is required only where workers handle highly concentrated pesticides and include rubberized clothing and gloves. This equipment should be provided all those working with the toxic materials and its use should be enforced.

Ordinary work clothes will probably suffice for workers on mixers or bagging units but should be made of fairly heavy, close-knit material, with long sleeve shirts fastened at both neck and cuff. Head and neck should be protected by a hat or cap with hood.

Eyes are particularly vulnerable, and dust goggles, preferably indirectly ventilated types, should be provided. Gloves, of natural rubber if available, are required for workers handling or in close contact with the mixture.

Individual respiratory units are needed, even with efficient dust collecting equipment, to protect the nose and mouth. In most cases a dual cup respirator with organic vapor cartridge and dust, fume and mist pre-filter will suffice although a full face gas mask, with canister for specific contaminant, may be required where there are extreme concentrations.

Clean-up after work requires removal of traces of the material that may have penetrated the protective clothing and shower facilities should be available.

Eating and smoking in the contaminated area, or prior to clean-up after exposure, should not be permitted.

Exposure period, concluded Henry, should be of relatively short duration and regular medical check-ups are a must.

G. P. T., JR.
Editor

FARM CHEMICALS

Buyers' Guide

Classified Index to Advertisers in 'Farm Chemicals'

ALDRIN

Ashcraft-Wilkinson Co., Atlanta, Ga.
Shell Chemical Co., Agr. Chem. Div., Denver, Colo.

AMMONIA—Anhydrous and Liquor

Ashcraft-Wilkinson Co., Atlanta, Ga.
Commercial Solvents Corporation, New York City
Escambia Bay Chem. Corp., Pensacola, Fla.
Grand River Chem. Div., Deere & Co., Tulsa, Okla.
Lion Oil Co., El Dorado, Ark.
Mississippi River Chem. Co., St. Louis, Mo.
Nitrogen Div., Allied Chemical & Dye Corp., N.Y.C.
Phillips Chemical Co., Bartlesville, Okla.
Sohio Chemical Co., Lima, O.

AMMONIA CONVERTER

J. C. Carlile, Corp., Denver, Colo.

AMMONIUM NITRATE

Ashcraft-Wilkinson Co., Atlanta, Ga.
Commercial Solvents Corporation, New York City
Escambia Bay Chem. Corp., Pensacola, Fla.
Lion Oil Co., El Dorado, Ark.
Mississippi River Chem. Co., St. Louis, Mo.
Phillips Chemical Co., Bartlesville, Okla.

AMMONIUM SULFATE

See Sulfate of Ammonia

BAGS—BURLAP

Chase Bag Co., Chicago, Ill.

BAGS—COTTON

Chase Bag Co., Chicago, Ill.

APPLICATORS—Ammonia

KBH Corp., Clarkdale, Miss.

APPLICATORS—Liquid Fertilizer

Krause Plow Corp., Hutchinson, Kan.

BAGS—Multiwall-Paper

Chase Bag Co., Chicago, Ill.
International Paper Co., Bagpak Div., N. Y. C.
Hammond Bag & Paper Co., Wellsburg, W. Va.
Kraft Bag Corporation, New York City
Union Bag & Paper Corp., New York City

BAGS—Dealers and Brokers

Ashcraft-Wilkinson Co., Atlanta, Ga.
McIver & Son, Alex. M., Charleston, S. C.

BAG CLOSING MACHINES

International Paper Co., Bagpak Div., N. Y. C.

BAG PRINTING MACHINES

Schmuts Mfg., Louisville, Ky.

BAG FILLING MACHINES

E. D. Coddington Mfg. Co., Milwaukee, Wisc.
Stedman Foundry and Machine Co., Aurora, Ind.
Union Bag & Paper Corp., New York City

BHC AND LINDANE

Ashcraft-Wilkinson Co., Atlanta, Ga.
Pennsylvania Salt Mfg. Co., of Wash., Tacoma, Wash.

BIN LEVEL CONTROLS

Stephens-Adamson Mfg. Co., Aurora, Ill.

BIN DISCHARGERS

Stephens-Adamson Mfg. Co., Aurora, Ill.

BONE PRODUCTS

American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Jackle, Frank R., New York City
Woodward & Dickerson, Inc., Philadelphia, Pa.

BORAX AND BORIC ACID

American Potash & Chemical Corp., Los Angeles, California
Woodward & Dickerson, Inc., Philadelphia, Pa.

BOX CAR LOADERS

Stephens-Adamson Mfg. Co., Aurora, Ill.

BROKERS

Ashcraft-Wilkinson Co., Atlanta, Ga.
Bradley & Baker, N. Y. C.
Jackle, Frank R., New York City
Keim, Samuel D., Philadelphia, Pa.
McIver & Son, Alex. M., Charleston, S. C.
Woodward & Dickerson, Inc., Philadelphia, Pa.

BULK TRANSPORTS

Highway Equipment Co., Cedar Rapids, Ia.

CALCIUM AMMONIUM NITRATE

McIver & Son, Alex. M., Charleston, S. C.
New York Hanseatic Corp., N. Y. C.

CALCIUM ARSENATE

American Agricultural Chemical Co., N. Y. C.

CAR PULLERS

Stephens-Adamson Mfg. Co., Aurora, Ill.

CARS AND CART

Atlanta Utility Works, The, East Point, Ga.
Stedman Foundry and Machine Co., Aurora, Ind.

CASTOR POMACE

Ashcraft-Wilkinson Co., Atlanta, Ga.
McIver & Son, Alex. M., Charleston, S. C.

CHEMISTS AND ASSAYERS

Shuey & Co., Inc., Savannah, Ga.

CHLORDANE

Ashcraft-Wilkinson Co., Atlanta, Ga.

CLAY

Ashcraft-Wilkinson Co., Atlanta, Ga.

CONDITIONERS

Ashcraft-Wilkinson Co., Atlanta, Ga.
Jackle, Frank R., New York City
Keim, Samuel D., Philadelphia, Pa.
McIver & Son, Alex. M., Charleston, S. C.
National Lime & Stone Co., Findlay, Ohio

CONVEYORS

Link-Belt Co., Chicago, Ill.
Stedman Foundry and Machine Co., Aurora, Ind.
Stephens-Adamson Mfg. Co., Aurora, Ill.
Sturtevant Mill Co., Boston, Mass.

COPPER SULFATE

Tennessee Corp., Atlanta, Ga.

COTTONSEED PRODUCTS

Ashcraft-Wilkinson Co., Atlanta, Ga.
Bradley & Baker, N. Y. C.
Jackle, Frank R., New York City
Woodward & Dickerson, Inc., Philadelphia, Pa.

CUSTOM PESTICIDE FORMULATION

Barco Chemicals, Inc., Des Moines, Ia.

DDT

Ashcraft-Wilkinson Co., Atlanta, Ga.

DIELDRIN

Ashcraft-Wilkinson Co., Atlanta, Ga.
Shell Chem. Corp., Agr. Chem. Div., Denver, Colo.

DILUENTS

Ashcraft-Wilkinson Co., Atlanta, Ga.
Pioneer Pyrophyllite Producers, Beverly Hills, Calif.
Summit Mining Corp., Carlisle, Pa.
Thomas Alabama Kaolin Co., Baltimore, Md.

DITHIOCARBAMATES

Berkshire Chemicals, New York City

DUST APPLICATORS

Raw Materials Trading Co., New York City

ELEVATORS

Power-Curve Conveyor Co., Denver, Colo.
Link-Belt Co., Chicago, Ill.
Stedman Foundry and Machine Co., Aurora, Ind.
Stephens-Adamson Mfg. Co., Aurora, Ill.

ENDRIN

Shell Chemical Co., Agr. Chem. Div., Denver, Colo.

ENGINEERS—Chemical and Industrial

Chemical Construction Corp., New York City
Stedman Foundry and Machine Co., Aurora, Ind.
Sturtevant Mill Co., Boston, Mass.

FERTILIZER—Liquid

Clover Chemical Co., Pittsburgh, Pa.

FERTILIZER—Mixed

American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Davison Chemical Co., div. of W. R. Grace & Co., Baltimore, Md.
International Min. & Chem. Corp., Chicago, Ill.

FERTILIZER—Organic

Lebanon Chemical Corp., Lebanon, Pa.

FILLERS

Bradley & Baker, N. Y. C.

FISH SCRAP AND OIL

Ashcraft-Wilkinson Co., Atlanta, Ga.
Bradley & Baker, N. Y. C.
Jackle, Frank R., New York City
Woodward & Dickerson, Inc., Philadelphia, Pa.

FULLER'S EARTH

Ashcraft-Wilkinson Co., Atlanta, Ga.

FUNGICIDES

American Agricultural Chemical Co., N. Y. C.
Berkshire Chemicals, New York City
Metalsalts Corp., Hawthorne, N. J.
Tennessee Corp., Atlanta, Ga.

HERBICIDES

American Potash & Chemical Corp., Los Angeles, California
Barco Chemicals, Inc., Des Moines, Ia.
Lion Oil Company, El Dorado, Ark.

HERBICIDES—Oils

Lion Oil Company, El Dorado, Ark.

HOPPERS & SPOUTS

Stedman Foundry and Machine Co., Aurora, Ind.
Sturtevant Mill Co., Boston, Mass.

IMPORTERS, EXPORTERS

Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Berkshire Chemicals, New York City
Woodward & Dickerson, Inc., Philadelphia, Pa.

INSECTICIDES

American Agricultural Chemical Co., N. Y. C.
American Potash & Chemical Corp., Los Angeles, California
Ashcraft-Wilkinson Co., Atlanta, Ga.
Barco Chemicals, Inc., Des Moines, Ia.
Berkshire Chemicals, New York City
Fairfield Chem. Div., Food Mach. & Chem. Corp., New York City
Pennsylvania Salt Mfg. Co., of Wash., Tacoma, Wash.
Shell Chem. Corp., Agr. Chem. Div., Denver, Colo.

IRON SULFATE

Tennessee Corp., Atlanta, Ga.

KAOLIN

Thomas Alabama Kaolin Co., Baltimore, Md.

LEAD ARSENATE

American Agricultural Chemical Co., N. Y. C.

LIMESTONE

American Agricultural Chemical Co., N. Y. C.
Ashcraft-Wilkinson Co., Atlanta, Ga.
National Lime & Stone Co., Findlay, Ohio

MACHINERY—Acid Making and Handling

Chemical Construction Corp., New York City
Monarch Mfg. Works, Inc., Philadelphia, Pa.
Stedman Foundry and Machine Co., Aurora, Ind.
Sturtevant Mill Co., Boston, Mass.

MACHINERY—Acidulating

Chemical Construction Corp., New York City
Stedman Foundry and Machine Co., Aurora, Ind.

MACHINERY—Grinding and Pulverizing

Bradley Pulverizer Co., Allentown, Pa.
Poulsen Co., Los Angeles, Calif.
Stedman Foundry and Machine Co., Aurora, Ind.
Sturtevant Mill Co., Boston, Mass.
Williams Patent Crusher & Pulverizer Co., St. Louis, Mo.

Buyers' Guide

MACHINERY—Material Handling

Clark Equip. Co., Construction Mach. Div., Benton Harbor, Mich.
Hough, The Frank G. Co., Libertyville, Ill.
Jaeger Machine Co., Columbus, O.
Link-Belt Co., Chicago, Ill.
Poulsen Co., Los Angeles, Calif.
Power-Curve Conveyor Co., Denver, Colo.
Sauerman Bros. Inc., Chicago, Ill.
Stedman Foundry and Machine Co., Aurora, Ind.
Stephens-Adamson Mfg. Co., Aurora, Ill.
Sturtevant Mill Co., Boston, Mass.

MACHINERY—Mixing and Blending

Munson Mill Mach. Co., Utica, N. Y.
Poulsen Co., Los Angeles, Calif.
Stedman Foundry and Machine Co., Aurora, Ind.
Sturtevant Mill Co., Boston, Mass.

MACHINERY—Mixing, Screening and Bagging

Poulsen Co., Los Angeles, Calif.
Stedman Foundry and Machine Co., Aurora, Ind.
Sturtevant Mill Co., Boston, Mass.

MACHINERY—Power Transmission

Link-Belt Co., Chicago, Ill.
Stedman Foundry and Machine Co., Aurora, Ind.

MACHINERY

Superphosphate Manufacturing

Link-Belt Co., Chicago, Ill.
Stedman Foundry and Machine Co., Aurora, Ind.
Sturtevant Mill Co., Boston, Mass.

MAGNESIUM SULFATE

Berkshire Chemicals, New York City

MANGANESE SULFATE

Tennessee Corp., Atlanta, Ga.

MANURE SALTS

Potash Co. of America, Washington, D. C.

MINOR ELEMENTS

Tennessee Corporation, Atlanta, Ga.

MIXERS

Munson Mill Mach. Co., Utica, N. Y.
Stedman Foundry and Machine Co., Aurora, Ind.
Sturtevant Mill Co., Boston, Mass.

NITRATE OF POTASH

Berkshire Chemicals, New York City

NITRATE OF SODA

American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Bradley & Baker, N. Y. C.
McIver & Son, Alex. M., Charleston, S. C.
Nitrogen Div., Allied Chemical & Dye Corp., N.Y.C.
International Min. & Chem. Corp., Chicago, Ill.
Woodward & Dickerson, Inc., Philadelphia, Pa.

NITROGEN SOLUTIONS

Ashcraft-Wilkinson Co., Atlanta, Ga.
Commercial Solvents Corporation, New York City
Escambia Bay Chem. Corp., Pensacola, Fla.
Lion Oil Company, El Dorado, Ark.
Mississippi River Chem. Co., St. Louis, Mo.
Nitrogen Div., Allied Chemical & Dye Corp., N.Y.C.
Phillips Chemical Co., Bartlesville, Okla.
Sohio Chemical Co., Lima, O.

NITROGEN MATERIALS—Organic

American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Bradley & Baker, N. Y. C.
International Min. & Chem. Corp., Chicago, Ill.
Jackie, Frank R., New York City
McIver & Son, Alex. M., Charleston, S. C.
Smith Rowland Co., Norfolk, Va.
Woodward & Dickerson, Inc., Philadelphia, Pa.

NOZZLES—Spray

Monarch Mfg. Works, Philadelphia, Pa.
Spraying Systems Co., Bellwood, Ill.

ORGANIC MERCURY COMPOUNDS

Metalsalts Corp., Hawthorne, N. J.

PARATHION

Ashcraft-Wilkinson Co., Atlanta, Ga.

PHOSPHATE ROCK

American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Bradley & Baker, N. Y. C.
International Min. & Chem. Corp., Chicago, Ill.
McIver & Son, Alex. M., Charleston, S. C.
Woodward & Dickerson, Inc., Philadelphia, Pa.

PHOSPHORIC ACID

American Agricultural Chemical Co., N. Y. C.

PLANT CONSTRUCTION—Fertilizer and Acid

Atlanta Utility Works, The, East Point, Ga.
Chemical Construction Corp., New York City
Link-Belt Co., Chicago, Ill.
Stedman Foundry and Machine Co., Aurora, Ind.
Sturtevant Mill Co., Boston, Mass.

POTASH—Muriate

American Potash & Chemical Corp., Los Angeles, California
Ashcraft-Wilkinson Co., (Duval Potash) Atlanta, Ga.
Bradley & Baker, N. Y. C.
Duval Sulphur & Potash Co., Houston, Tex.
International Min. & Chem. Corp., Chicago, Ill.
McIver & Son, Alex. M., Charleston, S. C.
Potash Co. of America, Washington, D. C.
Southwest Potash Corporation, New York City
United States Potash Co., N. Y. C.

POTASH—Sulfate

American Potash & Chemical Corp., Los Angeles, California
International Min. & Chem. Corp., Chicago, Ill.
Potash Co. of America, Washington, D. C.

PRINTING PRESSES—Bag

Schmutz Mfg. Co., Louisville, Ky.

PYROPHYLLITE

Ashcraft-Wilkinson Co., Atlanta, Ga.
Pioneer Pyrophyllite Producers, Beverly Hills, Calif.

REPAIR PARTS AND CASTINGS

Atlanta Utility Works, The, East Point, Ga.
Stedman Foundry and Machine Co., Aurora, Ind.

SCALES—Including Automatic Baggers

Atlanta Utility Works, The, East Point, Ga.
Stedman Foundry and Machine Co., Aurora, Ind.

SCRAPER MACHINES

Sauerman Bros., Inc., Chicago, Ill.

SCREENS

Atlanta Utility Works, The, East Point, Ga.
Ludlow-Saylor Wire Cloth Co., St. Louis, Mo.
Stedman Foundry and Machine Co., Aurora, Ind.
Sturtevant Mill Co., Boston, Mass.
Williams Patent Crusher & Pulverizer Co., St. Louis, Mo.

SEPARATORS, AIR

Williams Patent Crusher & Pulverizer Co., St. Louis, Mo.

SHOVEL LOADERS

Clark Equip. Co., Benton Harbor, Mich.
Hough, The Frank G. Co., Libertyville, Ill.
Jaeger Machine Co., Columbus, O.

SOLVENTS

Crowley Tar Products Co., New York City
Richfield Oil Corp., Los Angeles, Calif.

SPRAYS

Monarch Mfg. Works, Inc., Philadelphia, Pa.
Spraying Systems Co., Bellwood, Ill.

SPREADERS, TRUCK

Highway Equipment Co., Cedar Rapids, Ia.

STORAGE BUILDINGS

Butler Manufacturing Co., Kansas City, Mo.

STORAGE TANKS

Broadway Rubber Corp., Louisville, Ky.
Butler Manufacturing Co., Kansas City, Mo.
Cole, R. D., Manufacturing Co., Newnan, Ga.

SULFATE OF AMMONIA

American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.

Bradley & Baker, N. Y. C.
Jackie, Frank R., New York City
Lion Oil Co., El Dorado, Ark.
Nitrogen Div., Allied Chemical & Dye Corp., N.Y.C.
Phillips Chemical Co., Bartlesville, Okla.
Woodward & Dickerson, Inc., Philadelphia, Pa.

SULFATE OF POTASH—MAGNESIA

International Min. & Chem. Corp., Chicago, Ill.

SULFUR

Ashcraft-Wilkinson Co., Atlanta, Ga.
Texas Gulf Sulphur Co., New York City
Woodward & Dickerson, Inc., Philadelphia, Pa.

SULFUR—Dusting & Spraying

Ashcraft-Wilkinson Co., Atlanta, Ga.
U. S. Phosphoric Products Div., Tennessee Corp., Tampa, Fla.

SULFURIC ACID

American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Bradley & Baker, N. Y. C.
International Min. & Chem. Corp., Chicago, Ill.
Lion Oil Company, El Dorado, Ark.
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.

SUPERPHOSPHATE

American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Bradley & Baker, N. Y. C.
Davison Chemical Co., div. of W. R. Grace & Co., Baltimore, Md.
International Min. & Chem. Corp., Chicago, Ill.
Jackie, Frank R., New York City
McIver & Son, Alex. M., Charleston, S. C.
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.
Woodward & Dickerson, Inc., Philadelphia, Pa.

SUPERPHOSPHATE—Concentrated

Armour Fertilizer Works, Atlanta, Ga.
Bradley & Baker, N. Y. C.
International Min. & Chem. Corp., Chicago, Ill.
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.
Woodward & Dickerson, Inc., Philadelphia, Pa.

TALC

Ashcraft-Wilkinson Co., Atlanta, Ga.

TANKAGE

American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Bradley & Baker, N. Y. C.
International Min. & Chem. Corp., Chicago, Ill.
Jackie, Frank R., New York City
McIver & Son, Alex. M., Charleston, S. C.
Smith-Rowland Co., Norfolk, Va.
Woodward & Dickerson, Inc., Philadelphia, Pa.

TANKS—NH₃ and Liquid N

Broadway Rubber Corp., Louisville, Ky.
Butler Manufacturing Co., Kansas City, Mo.
Cole, R. D. Manufacturing Co., Newnan, Ga.
KBH Corporation, Clarksdale, Miss.

TOXAPHENE

Ashcraft-Wilkinson Co., Atlanta, Ga.
Pittsburgh Coke & Chem. Co., Agr., Chem. Div., Pittsburgh, Pa.

TRUCKS—SPREADER

Highway Equipment Co., Cedar Rapids, Ia.

UREA & UREA PRODUCTS

Bradley & Baker, N. Y. C.
Grand River Chem. Div., Deere & Co., Tulsa, Okla.
Nitrogen Div., Allied Chemical & Dye Corp., N.Y.C.
Sohio Chemical Co., Lima, O.

UREA-FORM

Nitro-form Agricultural Chemicals, Woonsocket, R. I.

VALVES

Monarch Mfg. Works, Inc., Philadelphia, Pa.

ZINC SULFATE

Tennessee Corp., Atlanta, Ga.

FARM CHEMICALS



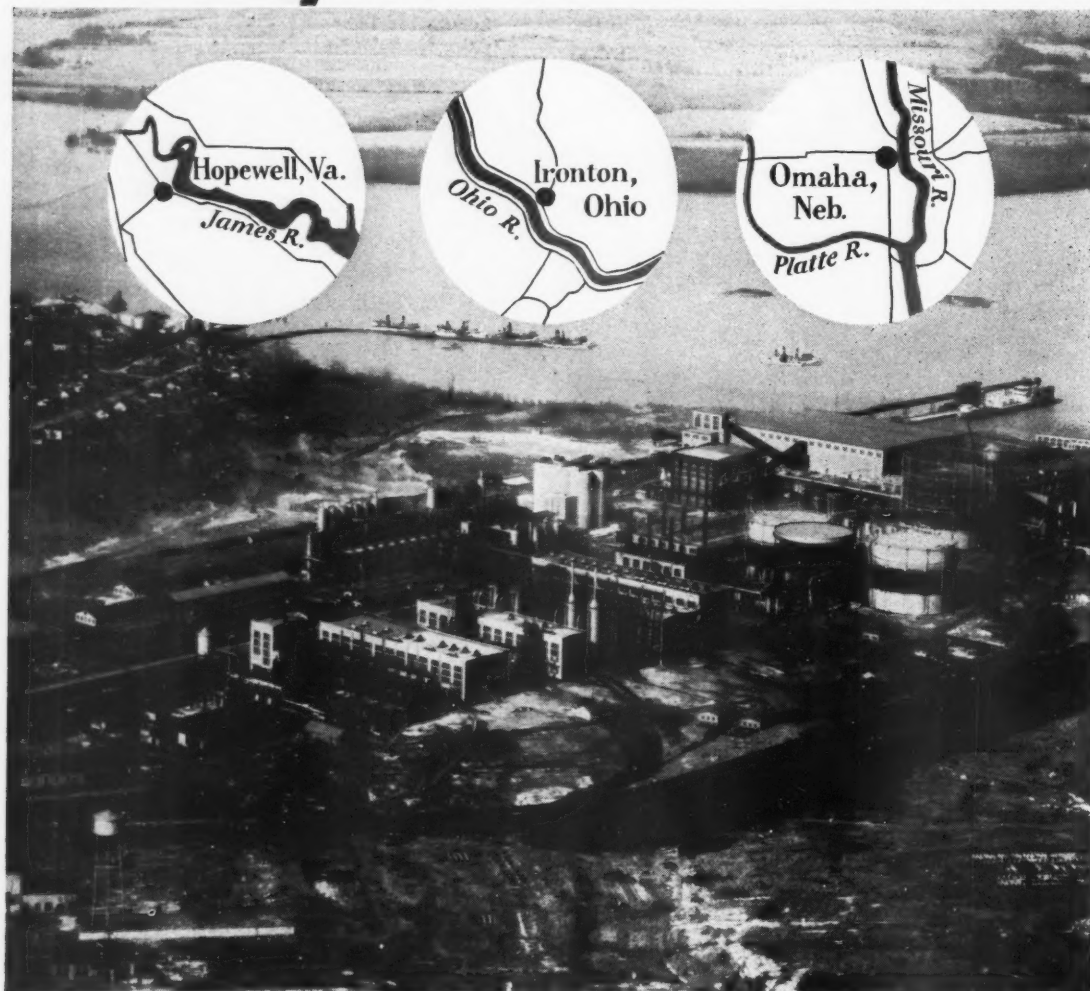
***Sincere best wishes
for a
happy Holiday Season***



POTASH COMPANY OF AMERICA
CARLSBAD, NEW MEXICO.

General Sales Office . . . 1625 Eye Street, N.W., Washington, D.C.
Midwestern Sales Office . . . First National Bank Bldg., Peoria, Ill.
Southern Sales Office . . . Candler Building, Atlanta, Ga.

South, North or West...



There's a Nitrogen Division plant ready to serve you . . . handy for shipping by rail or by highway. Three big and growing plants at Hopewell, Virginia, at Ironton, Ohio, and at Omaha, Nebraska, are strategically located to serve the fertilizer industry. We have the quality, the volume and the shipping capacity to supply your needs for Nitrogen Solutions and solids.



**PRODUCTS FOR
PROFITABLE FARMING**
**Nitrogen Solutions
(Nitrana® and Urana®)**
**American
Nitrate of Soda**
A-N-L®
Nitrogen Fertilizer
Urea Fertilizer
Sulphate of Ammonia

*Trade-mark

Call on us also for technical help based on 25 years of Nitrogen Solutions research and development. Improved new NITRANA®, URANA® and U-A-S® Nitrogen Solutions can help you turn out better-conditioned, top-quality mixed goods, often at lower cost. Ask for the help of one of our technical service representatives available to our customers without charge.

NITROGEN DIVISION Allied Chemical & Dye Corporation
New York 6, N. Y. • Hopewell, Va. • Ironton, Ohio • Omaha 7, Neb.
Indianapolis 20, Ind. • Kalamazoo, Mich. • Columbia, Mo. • Atlanta 3, Ga.
Columbia 1, S. C. • San Francisco 3, Calif. • Los Angeles 5, Calif.



End

